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OFFICIAL REPORT ON AKRON RUBBER STRIKE.

THE rubber strike at Akron, after an acute case of what the doctors call progressive anemia, finally dwindled down to nothing and expired of exhaustion, the last of March. Two weeks later the "Probe" Committee, appointed by the senate of the Ohio legislature, to investigate the cause of the strike, brought in its report. The essential features of this report are reproduced in the letter from our Akron correspondent, to be found on another page in this issue. The committee found that there were no conditions existing in the rubber plants of Akron that could of themselves have occasioned the labor demonstration that began in February, and for a short time assumed rather threatening proportions. They report that the strike was almost entirely the work of professional agitators, connected with the I. W. W., who went to Akron solely for the purpose of making trouble. The conditions in the rubber factories are reported to have been in the main most excellent. The operatives are abundantly supplied with light and ventilation, and surrounded by the best conditions that modern sanitation has been able to devise. Nor did they have any ground for complaint in regard to the rate of wages, which in some departments, particularly the tire making departments, are reported as exceptionally high. The wages of the men employed in these factories range from 17 cents an hour for unskilled labor to 60 cents an hour for skilled labor. The wages paid the women range from 10 cents an hour for beginners to 30 cents an hour for experienced operatives.

There are practically but two paragraphs in the report which savor of criticism of the employers. One refers to the incident which was seized upon as an excuse to start the strike, where a new wage scale was put into force in a certain department of one of the factories. The committee reports that a greater length of time should have been allowed to intervene, for purposes of discussion, between the date of the announcement and the date when the new scale was to go into effect. The other point of criticism refers to the "speeding up" system, which the committee deprecates.

The majority of the committee could not refrain from an attempt to make a little political capital out of their investigation, by bringing in a supplementary report containing certain tariff suggestions—which were quite out of place, as being entirely foreign to the purpose for which the committee was appointed; but the main report on the whole seems to be the result of painstaking and intelligent work. To the employer, it will emphasize the necessity of always keeping an open ear to any properly expressed request the employes may make; while to the workers in the Akron factories, the lesson of the report must certainly be a salutary one, as it shows them that compared with factory operatives generally they are exceptionally favored. This report ought certainly to serve as a strong deterrent to any further labor demonstrations in that city, as long as the present conditions continue.

THE DROP IN TIRE PRICES AND WHY.

ON the 31st of March The B. F. Goodrich Co. announced the reduction of price to the consumer of five per cent. in its general line of automobile tires, to take place on the first of April. Practically all the other important tire manufacturing companies followed with a similar reduction, although in some cases it did not apply to the entire line; some specialties being excepted. It is hardly necessary to state that this reduction in the price of automobile tires was extremely welcome to the car owners, particularly in view of the ascending tendency noticeable of late in the price of gasoline.

But that this reduction should have been decided upon so soon after the six weeks' strike in Akron, and when, because of that strike, there would naturally be a much smaller stock of tires on hand than would be the case under normal conditions, came as a surprise to the trade.

Two reasons are assigned by those who inaugurated this reduction, both sound and substantial; first, the marked drop in the cost of crude rubber during the last few months; and, second, the constant improvement in the manufacturing facilities.

It requires only a glance at crude rubber prices during recent years to see how steadily they have gone down.

The price of Upriver Pará on the first day of April, 1910, was $2.70; in 1911, $1.39; 1912, $1.22, and 1913, 87 cents. In other words, the best crude rubber costs today less than one-third of its cost three years ago.

In addition to the two causes assigned for the reduction, there is a third not officially referred to, but probably quite as potent as either of the others; namely, the increasing competition among tire makers. It is estimated that for the present year the consumption of automobile tires will reach 5,000,000. To supply that demand will require an average daily output of about 17,000 tires. There are two companies which have a combined daily capacity equal to this number; and besides these two leading companies there are between forty and fifty other tire manufacturers, some of them of no mean importance. So it is obvious that the present capacity has outstripped the present demand, and is likely to exceed it for some time to come. This inevitably means that tire prices cannot be kept very much above the figure at which the best equipped companies can afford to market them.

AN UN-AMERICAN WORD WITH A SINISTER MEANING.

THERE is nothing particularly repugnant to the American mind in a fight *per se*. The average American (whether creditable or otherwise) has rather a soft spot in his heart for a good fight; but it must be a fair fight, in the open and altogether square.

In the fight that labor has been waging against capital for a number of years—where the means employed have been manly, open and decent—the laboring man has received sympathetic consideration, not only from the disinterested public (as far as the public can be disinterested in such a dispute) but from the employer himself. It has been generally recognized that where the workman had a grievance he was entitled to state it, and to be heard, and to take any proper means for redressing that grievance.

But with the advent into our American labor situation of this new alien organization, the Industrial Workers of the World, methods have been introduced that do not appeal to the American public, and there has come into quite general use a new word, with a significance that is altogether abhorrent to everybody who has any appreciation of fair play and decent dealings in every contest. This word is "sabotage." In the recent strike among the rubber workers of Akron, this word appeared quite frequently. It is so new to our American vocabulary that it does not appear in even the most recent editions of the dictionaries. It comes from the French word "sabot," a wooden shoe with the secondary meaning of an iron drag placed under the carriage wheel to prevent it from turning. Thus "sabotage" is the stopping of the wheels. As used in labor discussions, "sabotage" is the doctrine of premeditated inefficiency or maliciously doing the wrong thing, or let us say, of doing your best to do your worst. It appears to be taught quite consistently by the leaders of the I. W. W., and it means that their members, where they cannot effect their ends by open opposition, are to retain their positions in the factory; apparently doing the work for which they are paid, but in reality doing it as badly as they can —wasting their time, damaging the machinery, injuring fabrics, or any other material that may be used, and in every way open to them making it impossible for their employer—whose money they are living on—to produce satisfactory and marketable goods. It is, in short, a process of poisoning the whole industrial system.

Such a method as this is so contemptible, that no organization that employs it can expect to have any standing before the bar of American public opinion. Unfortunately, it does not operate simply to the injury of the organization that practises it, but must inevitably operate to the injury of other organizations, which may be seeking by perfectly proper and legitimate means to better the working man's condition.

From the manufacturers' standpoint, this new doctrine is one that must be guarded against most vigilantly; but it is hardly probable that any important employer is not fully alive to the seriousness of this new phase of the labor problem, and is not taking all necessary steps to nullify its malignant possibilities.

CLEAN RUBBER IN BRAZIL.

RUBBER washing in such centers as Manáos and Pará, in spite of the laws passed for the *Defesada Borracha*, is not yet an accomplished fact. As the matter stands, the successful bidders may at once erect their factories and may wash such rubber as they can get. There has as yet, however, been no law passed making the washing of all rubber compulsory. Nor has there been any arrangement looking toward a government supervision and stamping of various lots. In other words, the government is feeling its way, with a view of doing only what will make the Brazilian product both better and cheaper.

It has always seemed to us that the place to clean the rubber is at the *seringal*. These seems to be no good reason why clean latex, smoked in a clean manner, should not produce clean *pelles*. Caucho, even if it were brought into camp in wet, dirty masses, can be cut into strips, then washed and stretched in any nearby rivulet, and allowed to dry out to a degree. This was successfully practiced on Panama rubber, which sold for 15 cents a pound more than in its usual form.

If the government would lower its export tax on clean rubber and raise it on dirty rubber, the gatherers would do the cleaning and reap the benefit.

THE COST OF AUTO. SHOWS.

THE Automobile Show held in Boston appears to have been exceptionally successful, viewed both from the standpoint of the exhibitor and of the visiting public. This exhibition, being the last of the large auto-

mobile shows for the present season, was the object of a good deal of attention, because of the question which has recently been discussed among manufacturers of automobiles, tires and other accessories, whether or not these big auto shows really pay. Their cost to the exhibitor is undoubtedly large, and the contention that they interrupt the regular and orderly work of the manufacturer, and demoralize his staff generally, is unquestionably well founded. But, on the other hand, there are many obvious advantages in this annual exploitation of the automobile and allied industries, and, while probably the greater part of those who are personally interested in them acknowledge that their cost is excessive, so far the number of those who advocate the discontinuance of these shows is far smaller than the number of those who are disposed to go on with them.

Without going into the subject as a whole, one phase might be pointed out where undoubtedly there has been a large element of waste, and where economy could be practised without the slightest detriment to the industry, or to the success of the exhibits. The element of waste referred to lies in the lavish and indiscriminate distribution of expensive advertising literature. Many companies have been accustomed in the past to printing a large number of different catalogs and booklets—sometimes as many as fifteen or twenty—many of them generous in size and expensive in character. These literary offerings have often been piled up on stands at the front of the booth, where whosoever would could help himself, the only limit being how many he was willing to carry away.

If all visitors represented paid admissions, and came to the exhibition with a serious desire for automobile and tire information, it would be a different matter; but, in view of the fact that many thousands—and in some cases the large majority—of the visitors enter through complimentary channels, and attend the show simply because it costs them nothing, it is quite obvious that in the throngs that crowd the aisles there is a large percentage of people—boys, girls and those in indifferent financial circumstances—who could by no stretch of imagination be classed among possible automobile buyers; and yet these are the people often who carry away the greatest weight of expensive literature.

Assume, for instance—and it is a conservative assumption—that during a week's exhibit 5,000 finely-printed and attractive booklets, costing ten cents each to produce, are carried away from a single booth by the visitors to the show, and that only 20 per cent. of the literature so distributed falls into the hands of those seriously interested in the books they take. That leaves a waste of 80 per cent., or $400, on the week's distribution.

Of course, it is not possible in distributing advertising to eliminate all waste, but it is possible to reduce this waste to a minimum. Elaborate catalogs and other expensive booklets can be kept where they are easily available for distribution to visitors who by their manner and inquiries, appear to belong to the class of possible purchasers, while inexpensive offerings will often serve just as well—and sometimes very much better—to appease the general crowd that surges up and down the aisle.

As an illustration of matter suited for the general visitor, a map, issued by one of the tire companies at the New York Automobile Show, might be cited. It was a leaflet showing an excellent map of the center of New York—sometimes referred to as "The Tenderloin"—and giving the location of all the principal hotels and theatres. This was something that not only interested the visitor from out-of-town, but also appealed to the seasoned New Yorker, as even the city man who has spent his life in the metropolis often finds himself ignorant as to the exact location of some new hotel or recently erected theatre.

To distribute advertising with nice discrimination is very much of an art, but it is one worth cultivating, as it often means the difference between the success or failure of an expensive exhibit.

That the drastic Underwood Tariff bill, as far as it relates to rubber manufacture, will hurt, is patent. Any appeal seems a waste of effort, however, and the trade is grimly taking its medicine and looking to the future—perhaps two, certainly four years hence.

That the firm of George A. Alden & Co. may emerge from its troubles and again occupy its former position of influence and helpfulness, is the sincere wish of the rubber trade of the world. It is within the memory of many now in active business, when every rubber manufacturer in the United States was dependent upon both banks and rubber importers for credit. Geo. A. Alden & Co. did their part to the extent of millions of dollars. Their history embraces the "carrying" of scores of companies until conditions became better. The assistance that they unostentatiously gave to others should in full measure be given in turn to them.

The election of George B. Hodgman to the presidency of the Rubber Club of America is an event upon which the association is to be congratulated. Mr. Hodgman, a former president of the Rubber Sundries Manufacturers' Association, an active member of the New York Chamber of Commerce and director in the Rubber Manufacturers' Mutual Insurance Co., has had valuable experience in commercial bodies. He is a dignified and competent presiding officer, and represents in his capacity as president of the Hodgman Co. the best traditions of the trade. Under his leadership the growth and usefulness of the club are sure to be enhanced.

A further showing of Brazil's purpose to be up to date in methods of rubber production is now evident in Rio. It consists in lessons in rubber tapping, the teacher being Dr. J. C. Willis, the director of the Botanic Gardens, who illustrates the methods followed in Ceylon and the Malay States on *Hevea* trees, in the Botanic Gardens. A series of cinematograph views have also been taken of this work, which will be shown up the Amazon.

Rubber in Southern Brazil—I.

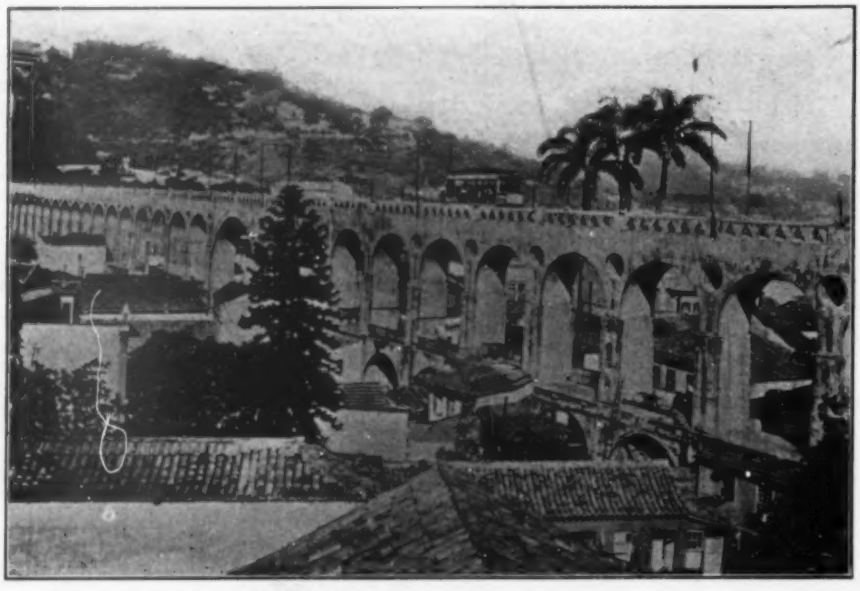
By the Editor of The India Rubber World.

FIRST LETTER.

Southern Brazil the Center of Rubber Interest—Three Weeks to Rio—Rubber News En Route—Cape Frio—Summer in January—A Marvellous Climate—The Most Picturesque City in the World—The Minister of Agriculture—The Defesa da Borracha—Rubber Washing Laws—Old and New Friends—Corcovado—The Sugar Loaf—The Botanic Gardens.

MANY rubber men have visited Northern Brazil, are familiar with Pará and Manáos, and perhaps with Ceara and Pernambuco, but do not know Rio de Janeiro. Yet an acquaintance with the greatest and most progressive of South American cities is necessary, if one is to adequately understand Brazil, particularly in its attitude to the rubber industry.

In the valley of the Amazon nearly all of the commercial activity centers in its rubber. But in the great southern country coffee, cattle, hides, sugar and cotton, together with the beginnings of many lines of manufacture, all have their effect in determining the governmental attitude toward rubber production, protection and taxation.



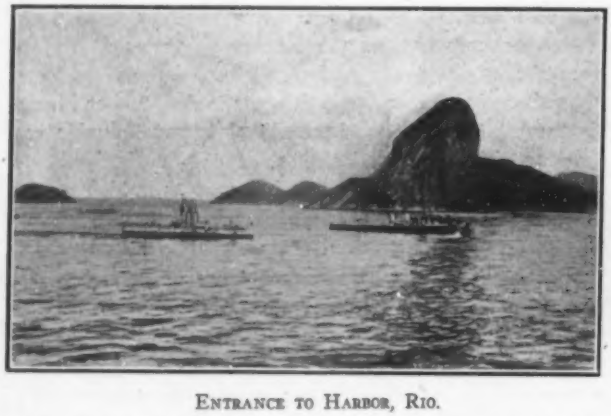
THE ANCIENT AQUEDUCT, RIO.

The early part of 1913 promised to be a period of exceptional activity in rubber legislation in Brazil, with the center of interest at Rio. The distinguished Brazilians who were present at the New York Rubber Exposition, made no secret of the fact that they felt that the situation in Brazil was nearing a crisis, and that the Federal and State Governments were preparing to do everything possible to preserve their great industry, and to put it in a position to compete with Eastern plantation rubber.

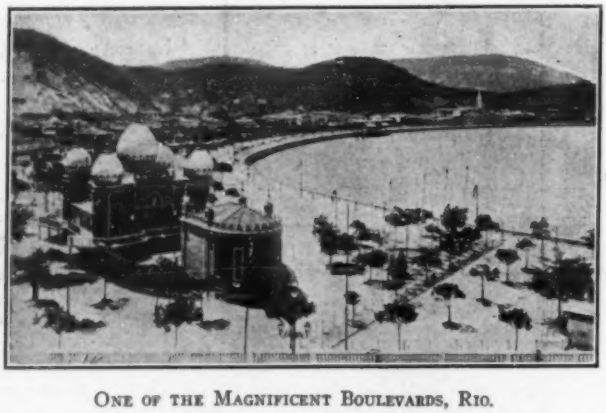
Rio de Janeiro is three weeks distant from New York by steamer, and correspondence is slow and inadequate. These and other considerations led me, therefore, to journey down to the Brazilian capital to see for myself, at least in part, what was doing or about to be done.

There are three ways commonly employed by those who take this journey,—by the cargo boats that ply regularly between New York and the River Plate; by the excursion steamers that intermittently visit the islands of the Caribbean and the eastern coast of South America; and by the fine passenger boats that ply between Europe and Rio. The cargo boats have been uniformly bad, as far as bed and board go, although the constant and emphatic protests of traveling Americans are taking effect in an attempt at better service and more courteous treatment. By taking a Dutch boat to Barbados, and a big excursion boat from there, I got to Rio speedily and comfortably.

It is a curious fact, but the smoking room of any steamer bound for a rubber port yields an amount of information credible and otherwise, relating to gum elastic that one could not get easily anywhere else in the world. On the two boats named, for example, I was informed of a new balata concession in Venezuela; of a great chicle concession in the same country; of a



ENTRANCE TO HARBOR, RIO.



ONE OF THE MAGNIFICENT BOULEVARDS, RIO.

great annual crop experiment in rubber in another South American country; of rubber planting in Trinidad, in the Guianas and the Colombias, etc., etc. One who knew the Amazon country well told at length of Commodore Benedict's enterprise for connecting Pará and Manáos by wireless; of the money and effort expended; and then when success was attained, of the decision of the Federal government that the states of Pará and Amazonas had no right to give telegraph concessions, such being the property of the Federal government. Another told of the rubber concession of the Commodore's twenty miles from Pará at Mojú, with a wealth of detail that proved that he had never visited it. That Brazil should treat the enterprising American generously, and appreciate the value of his undertaking all were agreed.

The monotony of the voyage was also broken by deck sports, fancy dress balls, the Captain's Dinner and a visit from Neptune as we crossed the Equator. The "King of the Sea" was a big German-American drummer who secured the position chiefly because of his size. It transpired at the last moment that he never had crossed the line, and as a finish to the ceremonies he was ducked in the same tank to which he had condemned his victims, and this in spite of his wrathful protests.

DR. LAURO MULLER.
Minister of Foreign Affairs.

Finally we sighted Cape Frio,—picturesque, forest clad, with its lighthouse perched far up on a shelf of rock. Then followed a rocky shore, beautiful in its array of mountain tops, steep ravines and wooded slopes, and a little later we sighted the "Sugar Loaf," "Corcovado," and other peaks that mark the entrance to the greatest harbor on the South American coast. We steamed into port just as night fell and dropped anchor far out from shore. At once two swift police boats, showing no lights, and moving without sound were circling our boat, keeping a score of noisy launches at a distance, until the doctor and the customs had taken possession. After a long wait the launches that had come for passengers were allowed alongside, and one of them proved to have been secured by a friend, who bade us welcome to Rio. He, in the first place, advised that we have our luggage examined on board, thus avoiding two or three days' delay at the customs. A few milreis properly placed quickly accomplished this, and we were off. Personally I should have enjoyed staying where I was a bit longer and taken my fill of the beautiful shore view. For night though it was, the great semi-circle of lights that marked the long boulevards that follow the sweep of the shore was fascinatingly beautiful. So also were the mountain peaks, shadowy, to be sure, but rising in, around, and back of the city, some with lights far up on their wooded sides, some dark, cloud-capped and forbidding.

Did I mention that although it was the month of February, it was midsummer and quite like a July night at home? Not oppressively hot, not nearly as hot as New York or Boston can be, but comfortably warm.

We went first to the Estrangeiros, an excellent downtown hotel, but as the Carnival season was near at hand, there was no choice of rooms, so we changed to the International, situated 2,000 feet above the city in the forest reserve that is within the city limits, and were most comfortably housed. The first thought of the Anglo-Saxon visitor to Rio is the supposed danger from yellow fever. This is due to the time, now happily long past, when the city was more or less a pest hole. The scourge has, however, been stamped out forever, in all probability, and there has not been a single case, so it is said, for the last ten years. Americans and English do not seem to appreciate this fact, and those who for business or professional reasons are slated to live in Rio for a period of months or years, are likely to have forebodings. For example, one scholarly gentleman told me that before accepting his billet he had carefully specified that he should be required to be in the city only during the day, that his nights should be spent at Petropolis, a mountain resort a few miles distant. On his arrival in Rio, however, upon learning of the true

J. SIMAO DA COSTA.

DR. PEDRO DE TOLEDO,
Minister of Agriculture.

DR. J. C. WILLIS,
Director of the Botanic Gardens.

state of affairs, he promptly took a house there, and has been perfectly healthy and contented ever since.

Speaking of climate, Rio possesses one of the most equable in the world. The hot season of January and February is not oppressive, and as for the rest of the year it is enchantingly spring-like. The rainfall is evenly distributed and torrential tropical downpours are unknown. The nights are characterized by heavy dews, so that from one year's end to the other flowers bloom, and grasses and leaves are always green. Almost anything tropical or sub-tropical thrives there, and the result is an exceedingly varied flora.

No city in the world possesses so picturesque a setting. The original site was a tiny plain bordering on the bay, backed by a maze of mountains big and little, most picturesquely disposed, and covered to their tops with jungle. As the city grew it climbed the slopes, went up the valleys, skirted the shores and covered other little plains until today it extends some fifteen miles, with suburbs so unevenly and remotely disposed, that were it not for the excellent electric car service, the fine boulevards and the automobile, it would be a metropolis of magnificent distances but of residential isolations.

THE MONROE BUILDING, RIO.

THE GUARANTEIRA-AMAZONIA BLDG., RIO.

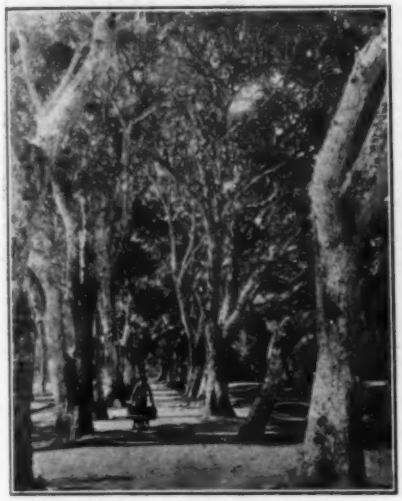
The "bonds," this is, the street cars, are controlled by a company that also does the electric lighting. It is a foreign corporation, partly European and partly American, the moving spirit in which is Percy Farquhar, an American, who has financed many other great undertakings, such as railroads, the Port Works at Pará and Rio; and according to the Brazilian papers he and his are a cruel monopoly. However that may be, they give wonderful service, and have added much wealth to the country.

The man to whom Brazilians have naturally looked to assist them to maintain their supremacy in rubber is Senhor Pedro de Toledo, Minister of Agriculture. He is an able head of his department, but it must be remembered that all of the agricultural interests must be considered by him, and that perforce he has been obliged to move slowly. No doubt the recommendations put forward by the Rubber Congress in Manáos in 1910 had their effect; for shortly after that an investigation of the present and the future of rubber planting in the Middle East was fully made by Dr. Jacques Huber of Pará. Unfortunately at the same time an investigation by certain corporate interests was also made, the report of which tended to minimize the danger of the plantation rubber in competition to wild. It therefore came about that the great governmental planting of *Hevea* that was projected came to nought. The Minister of Agriculture, however, was able to put through his "Defesa da Borracha" plan. This consists in a central bureau situated at Rio, the head of it being Senhor Pereira Da Silva. Under him are sub-heads located at various centers throughout the rubber areas. At once commissions were sent out in all directions to collect and prepare facts about gathering, costs, notes on transportation, etc., all of which will be passed upon at the head office in Rio. It is also said that the government has charge of the Cerqueira Pinto process for coagulating the latex of the *Hevea* and *Castilloa Ulei*. This process, it will be recalled was exhibited at the International Rubber Exposition in New York. For the Manihots the Hess process is also government property. The most interesting project for the reduction of the first cost of rubber, however, was the plan to wash it all before it left the country. As already chronicled (see INDIA RUBBER WORLD, April, 1913) this was to be done by laws that gave bonuses for washing plants in the various centers such as Manáos, Pará, etc. This would mean that instead of some 40,000 tons of rubber wet and dirty, Brazil would ship say 30,000 tons clean and approximately dry. It was further planned to have lots kept separately, and to fix a government stamp upon each lot—a guarantee of quality.

The washing of rubber is to the man in the rubber mill a very simple operation. But to one in Brazil, familiar only with crude rubber and with at best only a book knowledge of its handling in the factory, it is very much of an unknown art. One alert Brazilian, J. Simão da Costa, however, went to Europe and spent some months in England, France and Italy in the great rubber mills, learning to wash rubber. On his return to Rio he placed his knowledge at the disposal of the government. In the meantime a law had been passed designed to encourage the manufacture of rubber goods in Brazil, and the Goodyear Tire and Rubber Co. of South America had been formed to put up a factory, draw the bonus and manufacture goods. It was right in the midst of this interesting state of affairs that I arrived at Rio.

The head of the Botanical Gardens at Rio, Dr. J. C. Willis,

was formerly head of the Royal Department of Agriculture in Ceylon. He gave me much assistance in securing facts and figures on *Hevea* planting in the Middle East when in 1904 I visited that part of the world, and so I naturally sought him first. If I may digress a bit, Dr. Willis was the discoverer of "Wound Response" in *Hevea*, and his experiments, observations and notes were a determining factor in the uniform success that attended rubber planting in Ceylon and the Malay States. This is no reflection upon the many able men attached to that Agricultural department, but it happened that he was in the right place at the right time to be useful.



AVENUE OF MANGOES.

AVENUE OF PALMS, BOTANIC GARDENS.

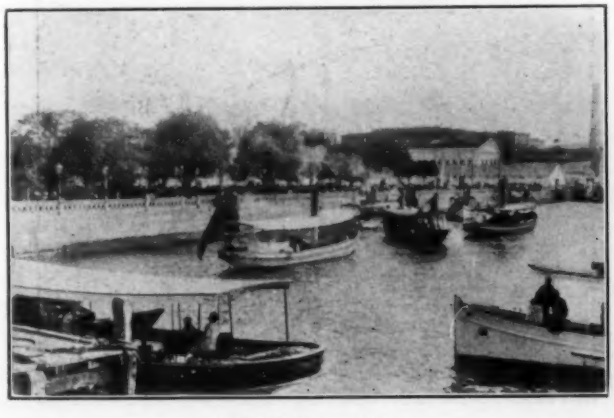
THE HEIGHTS ABOVE RIO, SYLVESTRE.

I found Dr. Willis deeply engrossed in the work of making of the somewhat neglected Rio gardens "the most complete and beautiful tropical botanic gardens in the world." And that is undoubtedly what he will accomplish within the next ten years. Thus it was that his immediate interest was not in rubber or rubber washing. He did, however, put me in touch with the men who were vitally interested. The first thing was a visiting membership to the "Club Central," where all the English and Americans to the number of seven hundred belong. Then came a dinner at which I met George Morgan, the American Ambassador; Mr. Ellis, of the Geological Survey, and Sr. Rodrigues, owner of the "Jornal do Commercio," the "London Times of Brazil." He took me to call upon the Minister of Agriculture, Sr. Toledo, and the head of the *Defesa da Borracha*, Sr. Da Silva, and arranged visits to the many points of interest round and about the city.

Then J. H. MacFadyean, the head of the Goodyear Tire and Rubber Co. of South America, looked me up. His story of the decision to start a factory in Rio, of the opposition of local rival concerns and of his persistent diplomatic work was interesting and enlightening. At the time I saw him his bid for a manufacturing plant had not been accepted. He had also put in a bid for a washing plant at Manáos, not to make money, as he explained, but to do the work at a fair price, and to keep other bids down to a reasonable figure.

Directly after my chat with MacFadyean I met J. Simão Da Costa on the Avenida. I had thought of him as being at his home in Pará, and was delighted to find him in Rio. He took me to the Guarantea Amazonia building, where his offices are situated, and gave me the full story of the *Defesa da Borracha* from the Brazilian point of view. He also secured for me documents, books, maps and photos; all of which helped to throw light on the Brazilian situation.

Sr. Da Costa delivered two scholarly lectures last winter before the Club De Engenharia at Rio, on rubber in Brazil from the plantation standpoint, and again from a commercial and industrial standpoint. At both of these gatherings the most distinguished men in the city were present, and the lectures did much to give them a clear view of the world's rubber situation.



BOAT LANDING, RIO.

WATER VIEW, BOTANIC GARDENS.

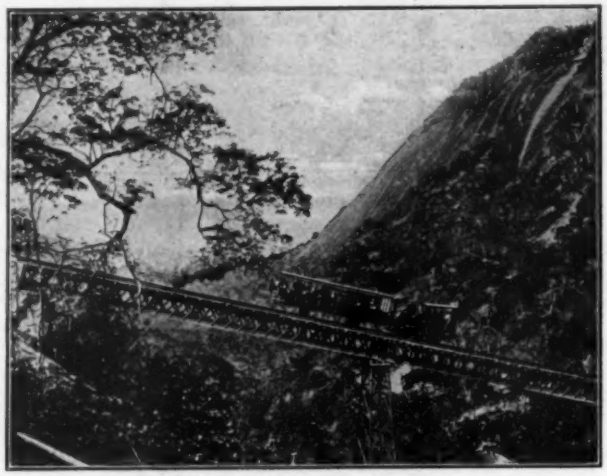
Through the courtesy of Sr. Roderigues I also breakfasted with the Minister of Foreign Affairs, Sr. Müller, who is shortly to visit the United States to return the visits of Secretaries Root and Knox. He is very much the type of man that Root is, and is one of Brazil's leading statesmen.

To make the story complete, I should describe in detail the Carnival season with its joyous and orderly crowds, its magnificent procession of "floats" and its three days of confetti throwing and perfume spraying—for the Carnival came when I was there. Or perhaps I should tell of the trip to the mountaintop, "Corcovada," first, by trolley that circles and climbs half way up, then by cog-railway to the summit, where one has an incomparable view; or of the basket cage, slung on a cable, that takes one to the top of "Sugar Loaf," the lone granite peak that stands sentinel at the harbor's mouth. I certainly should be derelict if I did not chronicle a delightful visit to the Botanic Gardens, or the afternoon tea with the Director and his charming wife, and then the visit to the gardens themselves. One

J. H. MACFADYEAN.

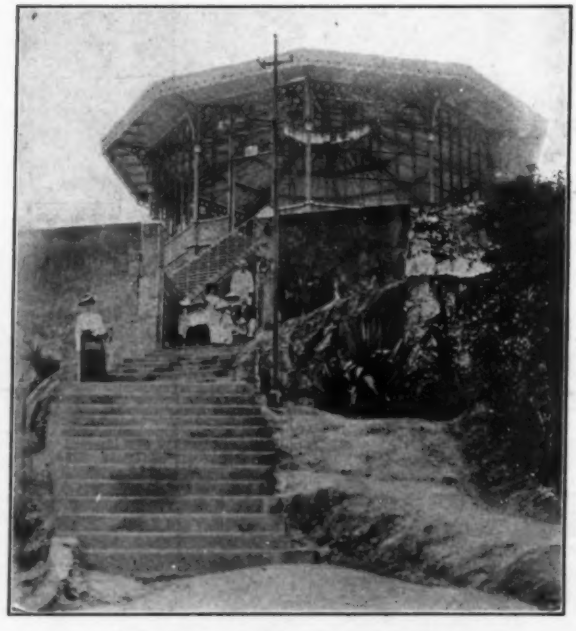
feature is particularly striking in these gardens—the palms. Of the many other beautiful palms there, none are so striking as a group of travelers palms, the like of which I certainly have never seen elsewhere. There is some rubber, for the *Hevea* will grow here, but its growth is slow, and it could not be profitably cultivated.

To go back to my visit to the Minister of Agriculture, I found him exceedingly interested in the problem of rubber washing and quite ready to listen to any suggestions. I made it clear to him that I represented neither rubber manufacturers nor importers, and that moreover I was wholly in favor of the complete standardization of crude rubber sorts. At the same time I pointed out that the rubber manufacturers of the world had hundreds of thousands of dollars' worth of machinery already installed for rubber washing and could probably do it cheaper than it could be done in Brazil. They were also familiar with the various grades of Brazilian rubber as they now exist, and that washing in Brazil would result in an entirely new series of grades which it would take time to learn. In addition I pointed out that the biscuits of Fine Pará that were acknowledged to have the most nerve of any sort of Pará rubber probably got their extra quality because they were kept in that shape, each film stretched and wet, for months before sheeting. That sheeting soon after coagulation would probably result in a product of less strength. My suggestion was that the rubber manufacturers be sent small washed lots at first, and be asked to report upon them before the attempt to wash all of Brazil's rubber.



INCLINED RAILWAY TO CORCOVADO.

My arguments were received with the most cordial expressions of interest, and after my departure Sr. Toledo wrote me upon the subject as follows: "I express my cordial thanks for your courtesy. Your remarks on the question of rubber washing were much appreciated—being founded on long experience and study, and being for that reason especially valuable. I shall consider these observations, and shall endeavor in the solution of this highly important problem to proceed step by step and with the greatest caution."



REST HOUSE AT SUMMIT OF CORCOVADO.

(To be continued.)

The Proposed New Tariff.

IN two important points the rubber industry has reason to be satisfied with the proposed new tariff. The idea which had been put forward of a duty on crude rubber did not find favor with the authors of the new measure, as according to its provisions, rubber continues on the free list, where it remains in spite of efforts made since the introduction of the bill to impose a 10 per cent. duty. The waste trade has succeeded in getting the objectionable clause withdrawn, which has in the past limited free entry to waste rubber worn out by use.

A much more serious point, in which the industry is deeply interested, is that of the sweeping reduction made by the new tariff upon the rates hitherto in force on rubber manufactures.

From the 35 per cent. to which manufactures of rubber are subject under the Payne bill, a reduction has been proposed to 10 per cent. on manufactures of rubber not specially provided for; the rate of hard rubber being, however, placed at 25 per cent.

On goods not strictly manufactures of rubber, but into the composition of which rubber enters, radical changes are proposed. Thus cables would, under the proposed tariff, pay 20 per cent., as against about 52 per cent. at present under a composite rate. Belting of cotton and rubber is reduced from 30 per cent. to 15 per cent.

With the view of offsetting these reductions in duties on manufactures of rubber, cuts have been made in various semi-manufactured and other articles used by rubber manufacturers, with the object of lowering the cost of production. The "basket" clause under which machinery has paid 45 per cent. has been replaced by one on a 25 per cent. basis. In the chemical schedule important reductions have been proposed in ground chalk, fuller's earth, calcined magnesia, castor oil, barytes, litharge, oxide of zinc, lithopone and other articles. Sulphuric acid, which now pays a duty of ¼ cent per pound (equalling 8.63 per cent.) would be on the free list. The changes affecting rubber chemicals are dealt with in another column.

Owing to the extent to which cotton goods are used by rubber manufacturers, their requirements are represented under various paragraphs, but the general character of the changes proposed may be inferred from the duty on cotton goods not specially provided for (now standing at 45 per cent.) being placed in the new measure at 30 per cent. Waterproof cotton cloth, which has paid a compound duty equalling a fraction over 50 per cent., is prospectively reduced to 25 per cent., while tire fabrics would be reduced from 45 per cent. to 25 per cent.

While finished automobiles are retained at 45 per cent., finished parts (not including tires) are reduced from 45 per cent. to 20 per cent. There being no special provision for tires, they would apparently come under the "basket" clause at 10 per cent.

The new tariff has still to be subjected to much discussion, and rubber goods, coming under section N, are near to the close of the dutiable portion.

Two tables are subjoined. One gives the principal changes proposed affecting the rubber trade, and another deals with the rates on rubber chemicals. The first includes extracts from the latest statistics of imports and exports, of which an advance copy was published in the March issue of the INDIA RUBBER WORLD (page 316), showing the distribution of imports and exports among the various countries of origin and consumption. From the table it will be seen that in the fiscal year, 1912, the imports of unmanufactured rubber represented $105,034,556, against which there were exports to the value of $6,646,950; the net consumption having thus represented slightly under $100,000,000.

The imports of manufactures, strictly classified as being "chief value rubber," amounted to $998,722, while the exports under the same category represented $11,167,289. The imports as recorded do not include such goods as cables and cotton belting, which are shown separately; nor waterproof cloth and tire fabrics; while any exports under the last three heads are included in the "all other" classification.

It is thus difficult to indicate the proportion of manufactures containing more or less rubber, which are included in the statistical returns of imports and exports.

No finality is to be expected until the new tariff is signed, but the details on the subject published in this issue may facilitate its provisions being understood by those whom it affects.

ASBESTOS IN THE NEW TARIFF.

From the table published in another column, it will be seen that it is proposed to reduce the duties on both woven asbestos fabrics and other manufactures of the article. Under the present tariff woven fabrics, wholly or in chief value, of asbestos, pay 40 per cent.; that rate being prospectively reduced to 20 per cent. Other manufactures of asbestos now paying 25 per cent., it is proposed to reduce to 10 per cent.

At the hearings before the Committee on Ways and Means arguments were adduced by Mr. R. G. Rhett, of the General Asbestos and Rubber Co., Charleston, S. C., in favor of making the duty on asbestos manufactures generally 40 per cent., thus covering both yarns and cloths. Testimony was also given by other representatives of asbestos manufacturing interests. From the measure as introduced it would seem that reductions are proposed in both cases dealt with at the hearings.

THE WASTE TRADE WINS AT WASHINGTON.

Since the new tariff has been in preparation the waste rubber trade has been active in efforts to get the final clause of par. 591 in the tariff of 1909 struck out. This clause limits the free importation of rubber scrap to such as has been worn out by use.

The official report of the hearings before the Committee on Ways and Means with respect to this clause, contains on page 5863 the testimony of Mr. Herman Muehlstein, of New York, as representing the American dealers in waste rubber. He presented the brief of the scrap rubber dealers asking the withdrawal from clause 591 of the words "which has been worn out by use." Useless ends and clippings of factory waste have been paying a duty of 10 per cent., although not available for any purpose other than scrap. In his testimony, Mr. Muehlstein emphasized the arguments of the brief.

Letters on the subject were addressed to the Committee by the Philadelphia Rubber Works Co., Trenton Scrap Supply Co. and United States Rubber Co., of Naugatuck, Conn., which are embodied in the official records of the hearings.

The clause appears in the proposed new tariff with the omission of the objectionable words.

NO DUTY ON CRUDE RUBBER.

Since the rubber industry has every reason to be congratulated at the failure of the attempt to impose a duty on crude rubber, it may be appropriate to recall the efforts made with a view to that result. One of the principal features of this opposition was the brief of the Rubber Club of America, addressed to the Committee on Ways and Means, on March 28, 1912, and supported by telegrams from many men prominent in the trade.

These efforts were reinforced by renewed representations during the past winter on the part of various rubber companies and their officials, made not only to the members of the Ways and Means Committee, but to the representatives in Congress of the rubber manufacturing centers.

TABLE SHOWING COMPARATIVE TARIFF ON CRUDE AND MANUFACTURED RUBBER AND ASBESTOS.

	Tariff 1909. Paragraph	Rate	Proposed Tariff. Paragraph	Rate
Asbestos—				
Crude	507	free	415	free
Manufactured	462	40%	378	20%
	462	25%	378	10%
Rubber—				
Crude	591	free	518	free
Balata	do		do	
Guayule	do		do	
Gutta Jelutong	do		do	
Gutta Percha	do		do	
Scrap	do		do	
Rubber manufactures	463	35%	379	10%
Elasticon, &c.	480	20%	396	15%
Hard Rubber	463	35%	380	25%
Rubber Sponges	463	40%	379	10%
Gutta Percha manufactures	464	35%	379	10%
Cables	135	52%	116	20%
Cotton and Rubber Belting	330	30%	267	15%
Waterproof Cotton Cloth	347	50½%	259	25%
Tire-fabric	330	45%	267	25%
Machinery	199	45%	169	25%
Chemicals		Special List.		
Cotton Ducks		According to Quality.		

TABLE SHOWING VALUE OF IMPORTS AND EXPORTS FOR 1912 OF CRUDE AND MANUFACTURED RUBBER AND ASBESTOS.

Imports, 1912.	Amounts.	Total.	Exports, 1912.	Amounts.	Total.
Asbestos—					
Crude	$1,378,821	$1,378,821	Crude	$16,891	$16,891
Manufactured	96,488		Manufactured	520,894	$520,894
	241,064	$337,552			
Rubber—					
Crude	92,956,013		Crude	4,890,905	
Balata	986,124		Balata	38,423	
Guayule	6,538,723		Guayule	98,517	
Gutta Jelutong	2,252,444		Gutta Jelutong	6,079	
Gutta Percha	210,314		Gutta Percha	945	
Scrap	2,090,938		Scrap	736,580	
			Reclaimed	875,501	
Total unmanufactured imports		$105,034,556	Total unmanufactured exports		$6,646,950
Manufactured	722,381		Belting-Hose, etc.	2,315,484	
Elasticon	87,399		Boston Shoes	1,502,890	
Hard Rubber	141,247		Tires	3,204,642	
Rubber Sponges	11,668		All other manufactures	4,144,273	
Gutta Percha manufactured	36,027				
Total manufactured imports		$998,722	Total manufactured exports		$11,167,289
Cables	580				
Cotton and Rubber Belting	173,185				
Waterproof Cloth.	43,965				

Tire Fabrics not specified.

DUTIES ON MATERIALS USED IN RUBBER MANUFACTURE.

In July, 1911 (page 380), the INDIA RUBBER WORLD published a table showing the duties on the principal rubber chemicals under the Dingley and Payne tariffs. Following up this table the subjoined comparison of the Payne duties with those proposed under the new tariff, will be found of interest at the present juncture. By using the two tables the incidence of duty on any article of importance can be traced over 16 years.

The *ad valorem* equivalents under the Payne tariff are those recorded in the official statistics, while those under the proposed new rates are estimates, based on the assumption that present prices will be maintained.

COMPARATIVE TABLE OF DUTIES ON CHEMICALS USED IN RUBBER MANUFACTURE UNDER THE PRESENT TARIFF AND THE NEW PROPOSED TARIFF.

Acids—	Tariff 1909.	Equal to.	Rates Proposed.	Estimated ad valorem equivalent.
Carbolic	free	free	free	free
Hydrochloric or Muriatic	free	free	free	free
Sulphuric pound	¼c.	8.63%	free	free
Ammonia—				
Carbonate pound	1¼c.	27.73%	¾c.	13.86%
Antimony—				
Ore, Crude Sulphide of (antimony contents) pound	1c.	28.90%	10%	10%
Oxide of Antimony pound	1¼c. and 25%	57.38%	25%	25%
Asphaltum or Bitumen—				
Crude ton	$1.50	35.28%	50c.	11.76%
Dried or Advanced ton	3.00	29.63%	50c.	4.94%
Burgundy Pitch	free	free	free	free
Chalk—				
Unmanufactured	free	free	free	free
Ground, Bolted, etc. pound	1c.	39.37%	1/10c. lb	4%

	Tariff 1909.	Equal to.	Rates Proposed.	Estimated ad valorem equivalent.
Balsams—				
Canada (crude)	free	free	10c. lb.	....
Storax	free	free		
Tolu	free	free		
Cadmium	free	free	free	free
Chloride of Calcium	25%	25%	free	free
Coal Tar—				
Crude and Pitch	free	free	free	free
Non-Medicinal Products	free	free	5%	5%
Emery and Corundum (Emery Ore)	free	free	free	free
Crude Artificial Abrasives	10%	10%	10%	10%
Grains and Ground (Corundum) .pound	1c.	16.98%	20%	20%
(Emery) .pound	1c.	22.56%	1c.	22.56%
Fuller's Earth—				
Unwrought and Unmanufactured ton	$1.50	19.32%	75c.	9.66%
Wrought and Manufactured ton	$3.00	32.65%	1.50	16.32%
Glycerine—				
Crude .pound	1c.	11.29%	1c.	11.29%
Refined .pound	3c.	10.63%	2c.	7.09%
Gums—				
Copal, Kauri and Damar	free	free	free	free
Lanolin	25%	25%	1c. lb.	....
Wool Grease—				
Crude .pound	¼c.	14.53%	¼c.	14.53%
Refined .pound	½c.	15.15%	½c.	15.15%
Magnesia—				
Calcined .pound	7c.	43.27%	3½c.	21.63%
Mica and Manufactures .pound	5c. & 20%	36.31%	30%	30%
Oils—				
Castor .gallon	35c.	34.94%	15c.	14.96%
Cottonseed	free	free	free	free
Linseed .gallon	15c.	27.11%	12c.	21.69%
Palm	free	free	free	free
Rapeseed .gallon	10c.	23.06%	6c.	13.83%
Baryta—Sulphate of or Barytes—				
Unmanufactured ton	$1.50	59.11%	15%	15%
Manufactured ton	5.25	52.11%	20%	20%
Black—From Bone, Ivory or Vegetable Substances	25%	25%	15%	15%
Blues—Prussian .pound	8c.	44.23%	20%	20%
Cobalt and Ore	free	free	free	free
Ultramarine .pound	3c.	32.22%	15%	15%
Oxide of Cobalt .pound	25c.	24.14%	10c.	9.93%
Green—Chrome Green .pound	4⅜c.	25.98%	20%	20%
Lead—Litharge .pound	2½c.	53.32%	25%	25%
Red—Vermilion Red, containing Quicksilver .pound	10c.	17.53%	15%	15%
Without Quicksilver etc .pound	4⅞c.	29.41%	25%	25%
Venetian Red	30%	30%	10%	10%
Whiting—Whiting and Paris White Dry .pound	¼c.	43.98%	1/10c.	17.50%
Zinc—Oxide Dry .pound	1c.	17.47%	....	....
White Sulphide or Sulphide, Lithopone, etc .pound	1¼c.	41.85%	....	....
Ground Dry	....	....	10%	10%
Mixed with Oil or Water	....	....	15%	15%
Plumbago	free	free	free	free
Potash—Bichromate .ound	2¼c.	45.86%	⅛c.	11%
Caustic, not refined	free	free	free	free
Refined .pound	1c.	12.75%	free	free
Pumice Stone—Unmanufactured $15 or less	30%	30%	5%	5%
Unmanufactured over $15 ton	$5	7.70%	....	....
Wholly or partly manufactured .pound	⅜c.	67.57%	⅛c. lb.	30%
Rotten Stone	free	free	free	free
Soda—Caustic .pound	½c.	15.39%	¼c.	7.68%
Sulphur (flowers of) ton	$4	13.73%	free	free
Talc—Ground, powdered or prepared	35%	35%	15%	15%
Turpentine—Venice	free	free	free	free
Wax—Mineral	free	free	free	free
Vegetable	free	free	free	free

The Rubber Sundries Manufacturers Dine.

OF the many successful annual dinners enjoyed by the Rubber Sundries Manufacturers' Association, none have been better than that held April 10 at the Waldorf-Astoria. On the afternoon of that day the usual business meeting was held. The officers elected were: Alexander M. Paul, president; Frederick H. Jones, vice-president; and E. E. Huber, secretary and treasurer.

ALEXANDER M. PAUL, PRESIDENT.

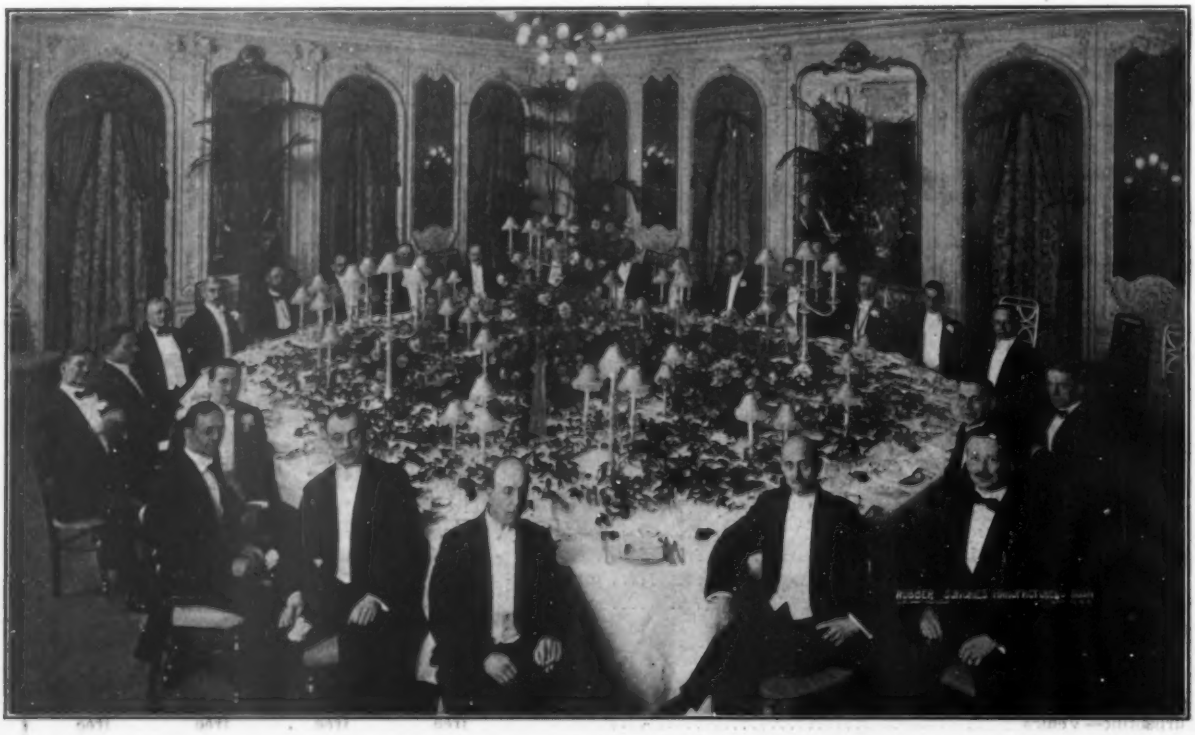
The dinner served at seven had the accompaniments of fine music, a wealth of flowers, and a menu that would tempt the most fastidious epicure. The souvenir was what at first glance looked like a cork tipped cigarette, but which turned out to be in reality a very ingenious self-contained cigar lighter.

As the newly-elected president was unavoidedly absent, Mr. George B. Hodgman, the retiring president, acted as master of ceremonies. With the coffee and cigars he first introduced the editor of THE INDIA RUBBER WORLD. In a five minute speech the speaker sketched the beginnings of the rubber sundries trade, with which he had been as a boy personally identified, described its present wonderful expansion, and semi-humorously pictured its future "forty years hence."

Mr. Howard E. Raymond, vice-president of the B. F. Goodrich Co., was the next speaker. After touching on a variety of topics of interest, he described the great floods in Akron, and the shifts to which the great rubber companies were put to continue running. The story was most graphic, and gave one a new view of the resource and alertness of the industrial chieftains of the rubber city.

Then followed an excellent vaudeville entertainment, the most startling feature of which was an Oriental mind reader who bewildered all by his accurate reading of unspoken questions, to which he returned answers often witty, always appropriate.

It was unanimously conceded that Messrs. Hodgman and Huber, the Committee of Arrangements, had again scored an unqualified success in the 1913 dinner.



BANQUET OF THE RUBBER SUNDRIES MANUFACTURERS' ASSOCIATION.

The Thirteenth Annual Meeting of the Rubber Club of America.

THE thirteenth annual meeting of The Rubber Club of America was held at the American House, Boston, on the evening of April 21. It opened with the usual business meeting and election of officers for 1913, which was followed by a meeting of the Board of Directors. After the meeting a very enjoyable supper was served, which as usual brought forth the undeniable musical talent for which the Club has always been noted, and which naturally added to the joy of the occasion.

The feature of the evening was an illustrated talk by Mr. Henry C. Pearson, the editor of THE INDIA RUBBER WORLD, which dealt with the experiences of his recent South American trip. Mr. Pearson's description of various places and conditions in South America were effectively illustrated by colored pictures, and certainly justified his opinion that "Rio Janeiro is the most beautiful city in the world."

GEORGE B. HODGMAN, PRESIDENT.

FREDERICK H. JONES, VICE-PRESIDENT.

Mr. Pearson showed some seventy beautifully colored views of Rio de Janeiro, sketch maps of the wild rubber areas showing the distribution of *Hevea*, *Hancornia* and *Manihot*, and views of *Manihot* plantations in the vicinity of the Rio San Francisco. The speaker described in detail Brazil's laws for the "Protection of Rubber," the projected washing plants and the great factory at Rio to be erected by the Goodyear Tire and Rubber Co. of South America.

PRESIDENT HOOD'S ADDRESS.

President Hood's address at the annual meeting was as follows:

"We have come to another milestone in the history of this Club. Tonight we elect a new president, a new vice-president, and new members of our Board of Directors. The Board of Directors will appoint a new Executive Committee. It is hoped that the board will see fit to re-appoint most of the members of the present Executive Committee.

"My first privilege is to express my personal thanks and the thanks of every member of this Club to the members of the Executive Committee.

"You will doubtless remember that prior to the 1912 annual meeting, the Executive Committee was larger than the Board of Directors, and the by-laws were changed a year ago to create a small Executive Committee. The wisdom of that change has been very apparent. The Executive Committee has regular quarterly meetings, elects the members, spends the money, and generally manages the business of the club.

HAROLD P. FULLER, SECRETARY.

J. FRANK DUNBAR, TREASURER.

HENRY C. PEARSON.

It has had several other meetings during the year.

"While a small Executive Committee is wise for the execution of business, we all feel that it would be advisable to have more frequent meetings of the Board of Directors, so that they would also feel the responsibilities of the club and more fully understand its problems.

"Two years ago the club was a social organization. There has been added to the sociability a large number of business duties, and these two years have been practically a period of transition from a purely social into a live club, for the purpose of profitably solving our common problems.

"The paper read by your president at the annual dinner last January mentioned several topics that should be properly discussed here—the tariff, the nomenclature of rubber, the clarifying of crude rubber dealings, the stopping of stealings of crude rubber (which really should be included in the last subject, as the way to stop stealings of crude rubber is to stop the market for it and to catch the purchaser of it.) What other agency is there to undertake the solving of any of these problems except this Rubber Club?

"Within two months we expect to have a firm membership of eighty. We are already assured of sixty firm members, which, with the dues from the active and associate memberships, will give the club an income of over three thousand dollars. What this money will be used for is a question several members have asked. There is the cost of the meetings of the Executive Committee, without railroad fares; there is the postage and stationery, and printing; the clerical work; and there is an attorney's bill for tariff and other briefs. But to my mind the most important expenditure that can be made is the expenditure for a paid secretary.

"The old adage, 'If you want a thing done, get a man who has all he can do,' applies to an executive in the sense of making decisions, but the lesson that has been learned this last year is that no president can find the time to give to the detail work of the club. And the pioneer work requires a man of ability and discretion.

"At this time I desire to formally thank the members of the Executive Committee and the members of this club for the many considerations and kindnesses shown me during my term as president."

THE TREASURER'S REPORT.

Statement—Rubber Club of America, as of April 1, 1913:

Receipts.

Bank balance as of April 1, 1912	$405.44	
Received for dues to April 1, 1913, from members	1,396.25	
Received for initiations—new members	165.00	
Received from members for banquets, outings, etc.	2,351.61	
		$4,318.30

Payments.

Expenses for banquets, outings, etc.	$3,012.43	
Sundry printing	142.05	
Sundry postage	33.98	
Bank collections	2.10	
Death resolutions and flowers—H. C. Morse, F. D. Balderston	36.00	
Clerical work	100.00	
Expenses a/c. meeting Executive Committee.	76.17	
Telephone calls	16.75	
Legal expenses, S. S. Meyers, "Tariff Brief"	300.00	
Expenses a/c. Messrs. G. B. Hodgman and F. C. Hood's trip to Washington in connection with tariff matter	67.85	
Bank balance, April 1, 1913	530.97	
		$4,318.30

THE SECRETARY'S REPORT.

BOSTON, Mass., April 1, 1913.

On the above date we completed our thirteenth year, and I believe that the work inaugurated during the period just closed, if properly followed up, will accomplish much good to the rubber trade as a whole.

Under the new classification, our membership today stands as follows: 59 Firm, 216 Active, 63 Associate, and 5 Honorary, a total of 343, or a net gain of 43 during the year. This membership will insure us an approximate income of $2,700, with which your Executive Committee can start systematic work.

This committee has deemed the club business of sufficient importance to hold regular quarterly meetings in New York, and these meetings have been well attended.

During the year we have lost four members by death—Messrs. F. D. Balderston, S. Lewis Gillette, E. R. Rice, and D. S. Pratt; 12 have resigned, and 7 have been dropped for non-payment of dues.

Your committee thought it wise on September 24 last to resign from the Massachusetts State Board of Trade, as they could see no benefit to be derived from membership in a purely local organization.

The summer outing was attended by 148 enthusiastic members and guests, who were united in their praise of the Rhode Island clambake and other attractions. The annual dinner in New York was of the usual high standard, and seemed to be thoroughly enjoyed by those fortunate enough to attend.

The following is a list of the officers, honorary vice-presidents, board of directors, and committees of the club for the year 1913:

OFFICERS.

George B. Hodgman, president, 806 Broadway, New York City.
Frederick H. Jones, vice-president, Andover, Massachusetts.
J. Frank Dunbar, treasurer, Geo. A. Alden & Co., Boston.
Harold P. Fuller, secretary, 49 Federal street, Boston.
John P. Lyons, assistant secretary, 15 West 38th street, New York.

HONORARY VICE-PRESIDENTS.

L. Dewart Apsley, Augustus O. Bourn, John M. Flint, Alexander M. Paul, Henry C. Pearson, Arthur W. Stedman, Frederic C. Hood.

BOARD OF DIRECTORS.

Henry Spadone, Gutta Percha & Rubber Co., New York.
George B. Hodgman, Hodgman Rubber Co., New York.
J. Frank Dunbar, Geo. A. Alden & Co., Boston.
Harold P. Fuller, E. H. Clapp Rubber Co., Boston.
L. Dewart Apsley, Apsley Rubber Co., Hudson, Massachusetts.
Augustus O. Bourn, Bourn Rubber Co., Providence.
John H. Flint, Tyer Rubber Co., Andover, Massachusetts.
Frederic C. Hood, Hood Rubber Co., Watertown.
Alexander M. Paul, Davidson Rubber Co., Charlestown.
Henry C. Pearson, INDIA RUBBER WORLD, New York.
Arthur W. Stedman, New York Commercial Co., New York.
Homer E. Sawyer, United States Rubber Co., New York.
Elisha S. Williams, Rubber Goods Mfg. Co., New York.
H. E. Raymond, B. F. Goodrich Co., Akron.
Francis H. Appleton, F. H. Appleton & Son, Boston.
Frederick H. Jones, Tyer Rubber Co., Andover.
George E. Hall, Boston Woven Hose & Rubber Co., Cambridgeport.
Allen L. Comstock, American Rubber Co., Cambridgeport.
Albert Zeiss, Arnold & Zeiss, New York.
H. S. Firestone, Firestone Tire & Rubber Co., Akron.

EXECUTIVE COMMITTEE.

Frederick H. Jones, Tyer Rubber Co., Andover (chairman).
Henry C. Pearson, INDIA RUBBER WORLD, New York.
Homer E. Sawyer, United States Rubber Co., New York.
Frederic C. Hood, Hood Rubber Co., Watertown.
Albert Zeiss, Arnold & Zeiss, New York.

NOMINATING COMMITTEE.

Alexander M. Paul, Davidson Rubber Co., Charlestown (chairman).
L. Dewart Apsley, Apsley Rubber Co., Hudson.
Homer E. Sawyer, United States Rubber Co., New York.
Robert L. Rice, Hood Rubber Co., Watertown.
Charles T. Wilson, Chas. T. Wilson, New York.

AUDITING COMMITTEE.

J. Everett Stone, Plymouth Rubber Co., Canton (chairman).
E. F. Dewing, Boston Rubber Shoe Co., Malden.

ENTERTAINMENT COMMITTEE.

William L. Proctor, Enterprise Rubber Co., Boston (chairman).
James H. Learned, Revere Rubber Co., Chelsea.
A. T. Baldwin, Walpole Tire & Rubber Co., Walpole.
Ira F. Burnham, Stoughton Rubber Co., Boston.
E. H. Kidder, United States Rubber Co., Boston.

SPORTS COMMITTEE.

Frank R. McKenna, Bourn Rubber Co., Providence (chairman).
Edwin L. Phipps, United States Rubber Co., Boston.
William L. Pitcher, Easthampton Rubber Thread Co., Easthampton.
Francis H. Appleton, Jr., F. H. Appleton & Son, Franklin.
William J. Kelley, Arnold & Zeiss, New York.

DINNER COMMITTEE.

Charles A. Coe, United States Rubber Co., Boston (chairman).
William E. Barker, United States Rubber Co., New York.
Robert L. Rice, Hood Rubber Co., Watertown.
Robert B. Baird, Rubber Trading Co., New York.
Theodore W. Bassett, United States Rubber Reclaiming Co., New York.

VALORIZATION IN JOLIET.

According to a Joliet paper, there is now being stored in that city, waiting for a rise in the rubber market, a total of 2,500 pounds of rubber—the first commercial product from the Mexican plantation of the Joliet Tropical Plantation Co., which has been operating for a few years, and has among its chief stockholders some of the substantial citizens of Joliet. The statement is made that had it not been for the revolutionary activities in Mexico during the last year or two, the plantation's output this year would have been 20,000 pounds, valued at about 80 cents a pound.

BRAZIL WITHDRAWING PREFERENTIAL DUTIES ON AMERICAN GOODS.

ACCORDING to a cable from Ambassador Edwin V. Morgan, received by the Department of State on April 10, 1913, the Brazilian Cabinet, at a meeting on April 9, decided upon the immediate withdrawal of the preferential duties hitherto applied to certain American goods. A preference of 30 per cent. has been enjoyed by American wheat-flour, and a rebate of 20 per cent. by some fifteen other articles, including manufactures of India rubber.

The whole value of the American exports to Brazil affected by this change is less than $5,000,000, of which rubber manufactures represent about $150,000. The withdrawal of this preference does not affect more than about one seventh of the total United States exports to Brazil.

As shown in table A, American imports from Brazil for the fiscal year 1912 represented about $124,000,000, while United States exports to that market were only about $35,000,000.

In table B is shown the movement of exports of American rubber manufactures to Brazil since 1907.

With the erection of the new factories in Brazil and with the loss of the preference, it would seem likely that a portion of this trade would be lost to United States manufacturers. They have been supplying about 75 per cent. of the total Brazilian imports of rubber goods.

The abolition of the preference in favor of the United States seems to have given satisfaction to the German rubber industry. The measure is said to be retroactive, and applying to the whole of 1913; so that the Brazilian importers of the goods affected, will have to pay the difference of duty on their imports of this year.

(A)—UNITED STATES TRADE WITH BRAZIL.

	Imports from Brazil.		Total of	Exports to
	Free of Duty.	Dutiable.	Imports.	Brazil.
1907.....	$96,601,490	$1,279,668	$97,881,158	$18,594,838
1908.....	74,462,813	115,051	74,577,864	19,364,238
1909.....	97,261,855	791,374	98,053,229	17,444,759
1910.....	107,599,155	555,336	108,154,491	22,764,183
1911.....	100,457,075	410,109	100,867,184	27,240,146
1912.....	.....	.....	123,881,644	34,678,081

(B)—EXPORTS OF RUBBER MANUFACTURES TO BRAZIL.

Fiscal Years	1907.	1908.	1909.	1910.	1911.	1912.
Belting, hose and packing	$15,221	$11,861	$25,310	$17,470	$34,442	$40,777
Boots and shoes	12,983	18,962	23,746	20,785	35,548	41,036
Automobile tires	.....	.....	.....	.....	10,112	24,952
Other tires	.....	.....	.....	.....	7,767	11,273
Other goods	27,808	29,044	35,406	66,890	62,596	81,201
Totals	$56,012	$59,867	$84,462	$105,145	$150,465	$199,239

(Tires were included with other goods until 1911.)

When the preferential was first applied, this country made no special concession to Brazil, beyond that embodied in the general tariff treatment of Brazilian products; under which more than 99 per cent. of these products come into the United States free of duty. This liberal tariff treatment of Brazilian articles was the consideration for the preference given by Brazil to a limited number of articles from the United States.

INDIA RUBBER LIFEBOAT.

A collapsible lifeboat has recently been patented by an English inventor. It is composed of thin sheets of india-rubber, reinforced with a thin layer of canvas, which does not perish or get hardened with repeated coats of paint. The resiliency of the boat diminishes the risk of injury from collision.

THE FUTURE OF RUBBER IN BRAZIL.

AMONG the features of the present movement for the development of rubber cultivation in Brazil, are the two interesting lectures delivered at Rio de Janeiro on December 26, 1912, and January 16, 1913, by Senhor J. Simão da Costa, industrial engineer. The lectures dealt respectively with the agricultural and commercial or industrial aspects of the question.

With relation to the cultivation of rubber, the lecturer referred with approval to the efforts in that direction of Drs. Lauro Sodré, Paes de Carvalho and Firmo Braga, natives of the State of Pará. They recognized the enormous advance in store for the rubber industry if the Federal government took the least interest in its development. Had their efforts been duly seconded, Brazil would have been in a position to control the world's market for rubber.

FORESTS OF NORTHERN BRAZIL.

No one who has not traversed the forests which mark the extended course of the River Amazon, can form an idea of the virgin forests in that region. It would be a mistake to judge from the forests of Southern Brazil; there being no comparison between the two. An opinion exists that a *seringal* is a forest almost exclusively composed of rubber trees. Nothing would be more erroneous, said the lecturer. Out of an average of 40 to 80 different species of trees per acre, only an average of 6 would be rubber trees under the more favorable circumstances.

TROUBLES OF THE SERINGUEIRO.

Doomed to live isolated from civilization in the virgin forest, the *seringueiro* is forced during seven months of the year to rise before daybreak, while the most expert of them cannot tap more than 120 trees a day. Were it possible to provide the *seringueiros* with moderately comfortable dwellings, and sufficient food, two of the greatest difficulties in the exploitation of the native *seringaes* would be overcome.

YIELD OF *HEVEA* TREES.

That the cultivation of rubber trees is profitable has been demonstrated in the East, as *Hevea* trees there commence to bear at the end of the fourth year; while the combination of *Hevea* with bananas would cover the whole expense of cultivation in the basin of the Amazon. M. Paul Le Cointe, the French agronomic expert, has demonstrated the correctness of this last assertion, in the course of his lectures.

REASONS AGAINST CULTIVATION OF RUBBER TREES.

Two reasons might apparently exercise a deterrent effect upon the development of rubber cultivation—the discovery of a laboratory substitute and the possibility of over production. With regard to the first, the lecturer expressed the conviction that synthetic rubber would never emerge from an academic stage. As to the second, he considered that even were the production of rubber quadrupled, it would still be absorbed in various industries.

CONSUMPTION OF RUBBER.

The constantly increasing demand for rubber in connection with telegraphy, telephony, lighting, power transmission, etc., insures the consumption of rubber in enormous quantities. On the basis of an estimated American yearly production of 300,000 automobiles, 18,000 tons of rubber would be wanted for the tires. Almost all mechanical industries require rubber. It is, moreover, an indispensable requisite of many popular games and sports, while it is used in footwear throughout the world.

THREE OBJECTS TO BE KEPT IN VIEW.

The three objects to be kept in view in any measures of reform, were thus summarized by the lecturer:

1. To supply fine *Hevea* rubber in sufficient quantity to prevent manufacturers from having to use substitutes and inferior products.

2. To keep in view an increase of production in order to satisfy the continued increased consumption.

3. To endeavor to reduce the cost of production, so as to permit the creation of new industries and to stimulate the development of those already existing. In this way raw material will be available in the sufficiently increased quantities needed, at reasonable prices.

PROPORTION OF RUBBER IN GOODS.

In support of his recommendation to produce enough fine rubber to meet the legitimate requirements of consumption, the lecturer stated that with 75,000 tons of rubber manufacturers produced 400,000 tons of rubber goods.

HOME MANUFACTURES FOR BRAZIL.

The lecturer expressed the opinion that any programme for the "Protection of Rubber" would be incomplete, which did not include measures for preventing Brazil being still inundated with foreign goods under the designation of rubber manufactures, which do not contain the smallest particle of that raw material. It would be possible by legislation to insist upon incontestable proofs that Brazilian rubber had been used in goods passing through the custom houses of the Republic. Such an arrangement would, however, only be possible when Brazil is able to supply the home market for rubber goods.

BRAZILIAN RUBBER MANUFACTURING PLANTS.

IN the April number of THE INDIA RUBBER WORLD the fact is reported of the awards for the proposed Brazilian manufacturing plants having been made. The Goodyear Tire & Rubber Co., of South America, obtained the award for the Rio de Janeiro plant; a summary of its proposal having appeared in the last issue of this journal.

The award for Pernambuco (Recife) was made to the Companhia Norte Brazil. According to that company's proposal, reproduced in the "Diario Official" of February 13, it offers to erect a large factory at the side of the Great Western Railway of Brazil, besides acquiring an extensive site in the vicinity. Among the principal articles manufactured will be machine belting, cables, waterproof goods of all descriptions, cotton fabrics for use in automobile tires and for other purposes. Rubber pneumatic and solid vehicle tires of all kinds, rubber carpets and mats, rubber hose, rubber heels and other rubber goods will likewise be made. The company expects to work up annually 700 tons of crude rubber.

Special attention will be paid to the manufacture of electric wire, for which purpose bar copper will be imported direct from Chile. It is expected to secure the orders of the various Brazilian States and municipalities for the above-named wire. The Companhia Norte Brazil was established in March, 1911, and claims to have a paid up capital equalling $400,000.

Subjoined are the equivalents of the items shown in general estimate of cost:

RECIFE MANUFACTURING PLANT.

	Brazilian Currency.	American Currency.
Buildings	2,350:000$000	$783,330
Machinery (including spinning and weaving plants)	2,700:000$000	900,000
Site, water supply	200:000$000	66,670
Total	5,250:000$000	$1,750,000

As the estimate of the Goodyear company for the Rio plant equals $1,757,804, or practically the same as that of Companhia Norte Brazil for Recife, the two companies are evidently in a position for close competition.

THE NEW BRAZILIAN WASHING PLANTS.

As recorded in the April issue of The India Rubber World (page 348) the awards for the Brazilian washing plants were made for Manaos to the Goodyear Tire and Rubber Co., of South America; for Pará to Gabriel Chouffour of Paris, and for Minas Geraes to Luiz Cantanhede de Carvalho Almeida and Arthur Haas. The estimates and proposed installation of machinery of the Manaos plant were reported last month.

THE PARA PLANT.

The proposal of Gabriel Chouffour for Pará, as published in the "Diario Official," states that he is acting in combination with the Banque Credit Française of Paris, and with the Compagnie de Caoutchouc Etablissements Hutchinson of the same city. It is proposed to establish a plant capable of washing and purifying 4,000 tons of scrappy Manaos in six months. The total annual production of scrappy Manaos is stated to be about 8,000 tons, of which 4,000 tons come into Manaos and 4,000 tons into Pará. It is the latter quantity to which the proposal applies, and which would have to be treated at the rate of about 27 tons a day for 150 days. The installation of machinery would be in groups composed as follows:

(a) One grinder (three cylinders); (b) Two washing machines, Werner & Pfleiderer type; (c) Three washing and compressing machines (two cylinders).

As each group could wash about 3,500 pounds in a day of ten hours, there would be 17 groups needed. Adding two groups for use in case of necessity, 19 groups would be required. It is estimated that these machines would cost and weigh for each group:

	Cost Equalling.	Weight (tons).
(a) (one machine)	$2,000	10
(b) (two machines)	4,000	12
(c) (three machines)	3,600	18
Transmissions	600	3
Foundations	1,000	—
		—
Total	$11,200	43

(Total cost of 19 groups, $212,800.)

On this basis the total estimate would amount to $587,500, composed as follows: (The original figures are in francs, but have been converted into American currency).

(1)—Machinery	$212,800	
Drying equipment	14,000	
Installation, etc.	28,000	
Pumps, water service	19,000	
Washing appliances	6,000	$279,800
(2)—Motive force		126,200
(3)—Buildings		109,500
		$515,500
Surveys and superintendence		20,000
Contingencies, 10 per cent.		52,000
Estimate francs, 2,937,500 =		$587,500

To this amount will have to be added freight on material, estimated at $40,000. A site will also have to be provided for, with an area of about 110,000 square feet.

The total estimates, it is stated, after making allowance for variations in cost of labor and freight, would represent in Brazilian currency 1,932:500$000; thus equalling in American money, $644,166.

The charge of washing or purifying rubber would be 200 reis per kilo (equalling about 3 cents per pound).

THE MINAS GERAES PLANT.

The proposal which has been accepted from Luiz Cantanhedo de Carvalho Almeida, civil engineer, and Arthur Haas, industrial proprietor, covers the construction on the bank of the river San Francisco, near the city of Pirapóra, in the State of Minas Geraes, of a plant for washing and purifying Maniçoba and Mangabeira rubber. The capacity of the plant is estimated at about 1,500 pounds a day.

WERNER & PFLEIDERER'S WASHING MACHINES FOR BRAZIL.

It is of interest to note that the proposal accepted by the Brazilian government for the Pará washing plant specifies the washing machines of Werner & Pfleiderer. As the installation would include 38 of such machines, the order will be of importance.

DAVID BRIDGES' RUBBER MACHINERY FOR BRAZIL.

The proposal of the Companhia Norte Brazil for two rubber manufacturing plants, one of which was awarded that company, states:

"The plans for both factories of rubber goods were drawn up by David Bridge & Co., Limited, of Manchester, one of the most noted English engineering firms."

BRAZILIAN IMMIGRATION.

One of the difficulties in the way of Brazilian development is being removed. The Federal Government recently signed a contract with the Companhia Rural de Commercio e Industria to introduce and settle 10,000 families of European immigrants.

DYNAMITE IN BRAZILIAN AGRICULTURE.

The Secretary of Agriculture of the State of Sao Paulo has asked the Minister of Finances to reduce the duties on dynamite in order to facilitate its employment in agriculture. As there is a dynamite factory in Brazil, the State Treasury has expressed disapproval of the proposed reduction.

PUERTO CABELLO RUBBER EXPORTS.

A consular report from Puerto Cabello shows the value of rubber shipped from the port in 1912 as $5,593 as compared with $10,683 in 1911.

MALAYAN PLANTERS FOR BRAZIL.

The need of capable superintendents is one of the admitted difficulties of the present Brazilian situation. The "Malay Mail" reports that large fees had been offered to Malayan planters, to induce them to take up work in Brazil. A case is likewise referred to in which a planter from Malaya, spending a holiday in England, had been offered and had accepted, a two years' agreement to go out to Brazil to supervise tapping methods. The salary attached to the post is $4,250 the first year and $5,000 the second, with all expenses paid—an important item, since the work involves a great deal of traveling from one property to another.

THE PERUVIAN AMAZON CO.

The Peruvian Amazon Co., which has owned the rubber concession in the Putumayo District in Peru where the atrocities have been committed on the Indian rubber gatherers—the disclosure of which has shocked the civilized world—was ordered into compulsory liquidation on March 19, by the Chancery Court of London. By the action of the Court, J. C. Arana was removed from the position of liquidator of the company.

Notes on Tension Tests of Rubber.

By P. L. Wormeley, United States Bureau of Standards.

A PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.

THE wonderful development in the rubber industry and the enormous demand for rubber products with their constantly multiplying and broadening fields of application, make it evident that the time is now ripe for the heartiest co-operation between manufacturers and consumers, with a view to establishing uniform methods of testing and, as far as possible, uniform specifications for goods intended for the same purpose. Uniformity of methods is absolutely essential to an intelligent comparison of the work of different laboratories, and a more general interest in the standardization of specifications and

P. L. WORMELEY.

methods of testing would result in a substantial benefit not only to the reputable manufacturer and large consumer, but also to the public at large.

In testing materials in general, the refinement of the methods used should be determined in each case by the nature of the material tested, and in the speaker's opinion there is no reason why rubber should be an exception to the rule.

Now as regards testing machines and apparatus used in determining the physical properties of rubber, a most interesting field is presented, in which there is room for many improvements. However, when one considers the rather large and apparently unavoidable inherent variation in the physical properties of rubber, it seems that in the present state of our knowledge, uniformity of methods is more to be desired in testing than extreme accuracy and refinement in the matter of taking measurements. This of course is particularly true in the case of commercial or routine testing where the goods have been manufactured to meet the requirements of specifications. Unfortunately specifications are not always as definite as might be desired, nevertheless, the adoption by both parties concerned of uniform methods of testing, would remove the cause of numerous misunderstandings between manufacturer and consumer.

To discuss in a comprehensive way the various methods that have been proposed for testing the physical properties of rubber would require a more thorough knowledge of the subject than I possess, and far more time than is at my disposal today. There are, however, certain points in connection with methods and machines used in testing the tensile properties to which I should like to ask your attention, with the hope that sufficient interest may be aroused to bring out a discussion and an exchange of ideas and opinions on the subject.

In regard to the most desirable form of test piece, the ring and the straight specimen, each has its particular advantages, and considerable difference of opinion is being expressed as to the relative merits of the two. The method which is usually followed in preparing rings involves several distinct operations which, if carefully carried out, consume quite a good deal of time. On the other hand the straight specimen may be cut out by a single stroke of the die, the operation requiring only an instant. Rings, when accurately cut, undoubtedly show uniform results, but on account of the varying stress over the cross-section, this method does not give the true value for tensile strength. An analysis of the distribution of stress in a ring shows that near the breaking point the tension decreases at an approximately uniform rate from the inside to the outside surface. If this variation in stress were the same for all rubbers, the ring method might be accepted as giving a true relative measure of strength, but tension curves plotted for different rubber compounds show that this is not the case.

The ring lends itself very rapidly to the automatic measurement of elongation, and in this respect its advantage over the straight specimen is apparent. It may be noted, however, that since the strength of rubber is not the same in all directions, being greatest in the direction in which the sheet has been rolled, the ring gives a smaller ultimate elongation than is shown by a straight specimen. This difference in strength and elongation by the two methods is not always found, but the results of tests which I have made on twenty different compounds show a general tendency toward higher values for straight specimens, particularly in the case of high-grade compounds.

Objection to the straight test piece is often raised on the ground that specimens fail by tearing at or near the grips. This difficulty may be overcome by gradually increasing the width of the test piece at the ends, and by using a grip that will not bruise or injure the rubber by excessive pressure. A form of grip which the writer has found to be exceedingly convenient and perfectly satisfactory consists of a series of circular discs mounted eccentrically, and in such a way that each disc acts independently in pressing against the test piece. By this means the gripping pressure holding the specimen is automatically increased in proportion to the applied tension, and furthermore, the pressure is uniform over the entire width of the grip even in cases where the thickness of the rubber varies.

For measuring the applied load it would appear that preference is usually given to some form of dead weight or pendulum machine, the spring balance or dynamometer being often looked upon with disfavor.

It is the policy of the Bureau of Standards to encourage as much as possible the testing of rubber goods and for this reason our testing machines have been constructed with a view to the greatest simplicity consistent with a reasonable degree of accuracy. For determining tensile strength and elongation we use an ordinary twin spring dynamometer attached to the upper end of a metal column. This column is slotted to receive a rack which carries the movable grip and which may be operated either by hand or by motor, with stepped pulleys for different speeds to meet the requirements of experimental work.

It is necessary, of course, to provide means for cushioning or preventing the recoil of the springs when a specimen breaks.

For this purpose we at first employed a dash pot, but later it was found more satisfactory to use a device which prevents recoil by holding the springs under the maximum tension. We realize that this method of measuring the load is in a way open to criticism, but at the same time we are gratified to find that after more than two years of continuous service the corrections for the dynamometers are so small as to be negligible, being well within the limits of variation of the materials tested. We have provided a set of weights with which the machines are calibrated from time to time, and should the dynamometers become inaccurate it will be a simple and very inexpensive matter to have the old springs replaced by new ones.

As already mentioned the measurement of elongation at rupture is a less simple matter in the case of a straight test piece than with a ring, the reason being that the rubber has a tendency to creep to a greater or less extent through the gripping surfaces, thus making it inaccurate to take measurements between fixed points on the grips. A little practice however enables one to observe the extension between gauge marks on the test piece with a fair degree of precision by pressing the end of a measuring scale gently against one of the marks and taking the scale reading just opposite the other mark as the specimen breaks. The dynamometer automatically registers the breaking load.

In my own experience the large amount of time consumed in testing the elasticity or what is commonly termed "set" or "recovery" after extension, has prompted me to devise means for expediting the work, with the result that a piece of apparatus has been constructed in which six specimens may be tested at once.

Of the tensile machines that I have had an opportunity to see in operation, or to study from illustrations, some appear to be rather better adapted to experimental or research work than to the requirements of routine testing. This is due partly to delicate or expensive construction, and also to the fact that more time is required in their operation than is desirable in ordinary routine work, for which, simplicity of construction, ease and rapidity of operation, would seem to be very desirable to say the least. For reasons already stated it would be difficult to obtain by autographic means, tension or hysteresis curves for straight test pieces. A rather slow but otherwise satisfactory method of securing curves may be carried out in the following way:

A narrow flexible scale either of paper or tracing cloth is attached to the test piece at the upper gauge mark by means of a small spring wire clip. From this scale one operator reads and announces the elongation at convenient intervals of 25 to 50 per cent., to a second operator who observes and records the corresponding tension. With a little practice this process becomes exceedingly simple and the points when plotted are found to give very smooth curves which clearly show the characteristics of different rubbers. Such curves offer a convenient means of studying the tensile properties of rubber when cut in different directions; and when compared with similar curves obtained with ring specimens the influence of the form of test piece is clearly apparent. In testing twenty or more different compounds I have found that specimens cut longitudinally or in the direction in which the sheet has been rolled through the calender give curves that lie well above the corresponding curves for specimens cut in the opposite or transverse direction. Ring test pieces produce curves which lie below those for longitudinal specimens and which sometimes coincide very nearly with the curves for transverse specimens.

The tension test is generally considered to be the most satisfactory and most widely applicable test for soft rubber products. In its various modified forms it is used to determine the more important physical properties such as strength, ultimate elongation and elasticity of recovery after a definite extension or a definite load. The methods followed in making these determinations vary according to the judgment of different persons, and since the results obtained are thereby influenced to a marked extent, the importance of uniformity of methods is not open to question. Of the influences that appreciably affect the results of tests may be mentioned the following, which being familiar to those interested in rubber testing would make an interesting subject for open discussion:

1. Shape and size test pieces.
2. Method of preparing and measuring test pieces.
3. Design of grip.
4. Direction in which test pieces are cut (when straight specimens are used).
5. Temperature.
6. Previous stretching.
7. Time allowed after extension and release, before measuring set.
8. Speed at which rubber is stretched.

Reference has already been made to the influence of the form of test piece, and as regards the area of cross-section it appears that in the case of rubber, as in the case of other materials, there is a tendency for small test pieces to develop higher unit values for strength and ultimate elongation, than larger ones.

2. The preparation of test pieces and the measurement of cross-section is generally conceded to be of the greatest importance, and unless this part of the work is carefully and accurately performed, it is useless to expect uniform results to follow. When one considers that the width of ring as commonly used is only 4 mm it is seen that a very slight eccentricity of say ½ mm introduces an error of 12½ per cent. in strength. In the case of straight specimens this particular difficulty does not present itself, but here also it is necessary to make sure that the cutting edges of the die are parallel and sharp. The usual method of cutting straight specimens I believe, is to strike the die a sharp blow with a mallet, but when used in this way, unless the blow is well directed, there is a tendency for the die to drift to one side, thus producing a specimen whose cross-section is not rectangular. It would therefore seem worth while to employ mechanical means to insure that all specimens are cut alike. In our work we have found that an arbor press is perfectly satisfactory, and we use a piece of leather under the rubber to prevent injury to the cutting edges of the die.

For measuring the thickness, a spring micrometer is probably the most convenient and accurate instrument available.

3. The design of grip is of importance in that excessive local pressure often causes failure at that point. For this reason it would seem desirable to use a form of grip which closes automatically as the tension is increased, and produces a uniform pressure across the end of the test piece.

4. As is generally known the tensile properties of a straight test piece are influenced by the direction in which it is cut and it is unfortunate that specifications sometimes fail to take this fact into consideration. For example, a common specification for water hose in this country limits the set after 300 per cent. extension, to 25 per cent. and a rubber compound used for such hose might show a set measured in the longitudinal and transverse directions of, say, 28 and 22 per cent., respectively. Unless this point were definitely covered therefore the hose might be accepted or rejected according to direction in which the test pieces were cut. The same is also true though to a less extent, in the case of tensile strength and ultimate elongation. This of course does not apply to ring specimens in which tension is exerted equally in all directions.

5. The influence of temperature on set, strength and ultimate elongation, though often disregarded, is undoubtedly great enough at times to justify consideration. When one considers that the temperature in a testing laboratory may easily vary twenty degrees or more between summer and winter it is not difficult to account for variations in results which might otherwise be overlooked.

6. The influence of previous stretching on strength and elongation is often so marked that it should be taken into consideration.

In testing for set and strength it is convenient to use the same test pieces for both determinations, but by so doing, the stretching which a specimen receives in connection with the measurement for set, has a tendency to increase not only its ultimate elongation but also its strength. This increase in strength appears to be more pronounced in high grade rubbers than in compounds of low quality. It is rather surprising that specifications do not always state the methods to be followed in this case.

7. There appears to be a marked difference in the methods followed in determining "set." Although it is well known that the recovery of rubber immediately after release is very rapid, it is not unusual to see specifications that require the set to be measured "at once" and the specimen remarked in preparation for a second stretch and measurement for set. Now since the straight specimen does not lend itself readily to the usual methods of taking autographic records and since it is very difficult to measure the set immediately after the release except by autographic means, much more uniform results could be secured by measuring the first set after a definite number of seconds, say fifteen or twenty, have been allowed to elapse.

A further objection to the practice of attempting to measure and remark the specimens immediately after release, is that a variation of only a few seconds in the time of remarking is sufficient to influence the second set very materially. So great is this influence in fact, that if the specified limits for set were insisted upon, material would often be accepted or rejected according to the quickness with which the operator was able to remark the test pieces after the first set.

8. A variation within reasonable limits of the speed at which rubber is stretched does not affect the strength and ultimate elongation to a very great extent, still its influence is generally considered to be sufficient to justify uniformity in the rate of stretching. Whether it is more desirable to maintain a uniform speed, or to increase the load at a uniform rate, is a point on which there are differences of opinion. I believe that stretching at uniform speed is the method usually adopted in this country.

In conclusion I would state that my aim has been to deal principally with those points which are most essential to the development of uniform methods of testing, no attempt having been made to treat the general subject of physical testing in anything like an exhaustive manner.

Lithopone and Oxide of Zinc in the Rubber Industry.

By G. C. Stone and Gilbert Rigg, of the New Jersey Zinc Company.

A PAPER PREPARED FOR THE THIRD INTERNATIONAL RUBBER CONFERENCE, BUT NOT READ.

THE zinc oxide of commerce is a white amorphous powder, the purity of which depends entirely on the character of the ore from which it is produced. Zinc ores, with the exception of those from Franklin Furnace, New Jersey, contain considerable lead and usually cadmium. For the production of a white oxide, suitable for rubber compounds, the presence of these constituents except in very small quantities is inadmissible, especially when the object is to make as white a product as possible. The necessity of avoiding the presence of lead and cadmium, which are the only volatile constituents of the ores other than zinc, insures unusual regularity in the composition of oxide of good color. For example, the oxide made by the New Jersey Zinc Co. contains upward of 99 per cent. of zinc oxide. The principal impurities are small quantities of carbon-dioxide and sulphur trioxide.

Zinc oxide is made by two processes, known respectively as the direct, or American, and the indirect, or French. In the direct process the zinc is driven off from the ore by the reducing action of carbon at a high temperature, and the zinc vapor burned direct to oxide. In the indirect process the ore is first smelted to produce metallic zinc, or spelter, and this metal is then burned to oxide. The latter process is naturally more costly than the former, and the products made by the two differ in certain material points.

DIRECT PROCESS OXIDE: The grades used in rubber compounding are "XX" (red brand) and "Special" (red brand). The difference between the two is mainly one of color, the Special being more desirable when the whiteness of the compound is important.

INDIRECT PROCESS OXIDE: These are graded as "Red Seal," "Green Seal" and "White Seal." They are of a purer and brighter white than direct process oxides. The Green Seal oxide is smoother and of a more perfect white than the Red Seal. The white Seal is a comparatively new product, and is characterized by its remarkable lightness and bulkiness. While Green Seal and Red Seal oxides are packed 300 pounds to the barrel, White Seal can only be packed 150 pounds to the barrel. The exact meaning of this difference will be discussed later in this paper.

CHEMICAL AND PHYSICAL PROPERTIES OF OXIDE OF ZINC: In general, the first essential of a zinc oxide for rubber purposes is, as indicated above, purity. The presence of serious amounts of metals that yield colored sulphides is entirely inadmissible, as during the process of vulcanization these sulphides are formed and discolor the product. Further, in rubber compounds it is in the first degree desirable that the compounder should know exactly what he is using if he is to get good results. Uniformity of composition, therefore, is very desirable.

The determination of zinc is a rather difficult matter, and the analytical error involved is frequently of such magnitude in comparison with the amount of impurity present as to make the determination valueless. Even in experienced hands the error is rarely less than 0.25 per cent., which, taken in connection with a zinc oxide content of over 99 per cent., obviously vitiates any attempt to determine the amount of impurity present by difference.

We believe that users of oxide will be well advised to confine their analytical work to simply testing for adulteration and to ascertaining the suitability of an oxide for a particular purpose by a practical compounding test in the laboratory, rather than to spend much time and effort in attempting to determine the zinc contents of the oxide. This mode of procedure we understand is in vogue in the majority of rubber laboratories.

Zinc oxide should dissolve in dilute hydrochloric acid without effervescence and without smell, and should leave no appreciable residue. On the addition of ammonium chloride to the solution and then an excess of ammonium hydrate and ammonium carbonate, the liquid should remain perfectly clear, or show at most a slight cloudiness. Care is needed in carrying out this test, as a considerable excess of ammonia and ammonium carbonate is necessary to dissolve the carbonate of zinc first formed. If the solution in hydrochloric acid has been performed in a test tube, it is desirable to transfer the liquid to a beaker before proceeding with the addition of ammonium chloride, etc.

Having regard to the nature of the process by which zinc oxide is made, positive results, as for example, a residue insoluble in hydrochloric acid, indicate either a leaded oxide, which is unsuitable for rubber purposes, or wilful adulteration.

Commercial zinc oxide consists of extremely small particles, so small in fact, that it is doubtful if they can be seen under the ordinary microscope. These small particles always form more or less coherent aggregates, which are apparently somewhat of the nature of a slightly elastic sponge entangling considerable air. These aggregates are what we see and speak of as the particles of zinc oxide. The tendency of an oxide to cohere in this way can be to a considerable extent regulated during the manufacture. In White Seal oxide, for example, the coherence is much slighter than in any of the other brands, which makes it necessary to pack only 150 pounds to the barrel. By forcing in a larger quantity this property can be partially destroyed.

It is necessary to distinguish clearly between the degree of coherence of an oxide and the true specific gravity, because the two properties are not infrequently confounded under the term "density." Broadly speaking, all amorphous oxides have the same specific gravity, the variation being fractional and the mean figure in the neighborhood of 5.6. This means that the zinc oxide itself, disregarding altogether its state of aggregation, is 5.6 times heavier than an equal volume of water. If, however, we take a box having a capacity of 1 cubic foot and weigh it full of White Seal oxide, and afterwards full of Red Seal Oxide, being careful not to compress the oxide in the box, we shall obtain a greater weight in the latter case than in the former. This means merely that there is more air entangled in the White Seal than in the Red Seal. It must be borne in mind that this property of entangling and holding a larger quantity of air is associated with the character of aggregation and compactness of the oxide groups, and that this latter condition has a decided bearing in the application of the oxide for some purposes.

It is possible to make a series of zinc oxides varying from solid crystals large enough for the form to be clearly visible to the naked eye, and which sink in water like stones, to the very light form known as "philosophers' wool," which floats in the air like thistle-down. All, so far as tested, have the same specific gravity, but the great variations in the amount of entangled air causes an enormous variation in the apparent densities.

The determination of the actual specific gravity is not an easy matter, and considerable care is necessary. The oxide tends to retain its entangled air very obstinately, and the use of a good vacuum pump is necessary to insure that the air has been completely expelled.

Owing to its extreme fineness it is useless to attempt to size oxide of zinc by any system of screens. Screening is, however, often useful to break up the aggregates formed. This can best be done in a bolting-machine of the type known as a centrifugal reel, in which a set of beaters revolve at a high speed inside a cylindrical screen which revolves more slowly. The beaters throw the oxide against the screen and force it through the meshes, which do not need to be finer than 20 to the inch. Shaking screens are unsuitable, as they tend to make the oxide cohere in small balls. Revolving screens without beaters tend to form balls, and also to coat themselves with an impervious layer of oxide, and if brushes are used to clean the screen they only make this coating harder. At intervals the coating drops off the screens and, with the balls, is discharged as rejections. This makes the operation of such screens very slow and wasteful.

Oxide of zinc is one of the most important ingredients of manufactured rubber, and its use is increasing very rapidly. Fortunately for the user it is remarkably constant in chemical composition and physical properties. The latter vary in the different grades, but the makers use every endeavor to keep them as nearly uniform as possible in each. Luckily, also for the user, it is rarely adulterated, and the adulterations are easily detected. The price, too, is stable, and any one who is misled by false ideas of economy into buying material as oxide of zinc at much less than the market price can hardly blame any one but himself if it proves unsatisfactory. If purchased from a reputable manufacturer and properly applied, it is certain to give satisfaction.

LITHOPONE: Lithopone is an amorphous white pigment made by mixing solutions of barium sulphide and zinc sulphate, which causes a transfer of the acids and produces an intimate mixture of zinc sulphide and barium sulphate. The properties of the mixture so formed are quite different from those of a mixture of the two dry salts. Barium sulphate has very little opacity, or hiding power, while zinc sulphide has a great deal. A mixture of the two dry has a hiding power intermediate between the two, and it varies almost directly with the proportion of zinc sulphide present. In properly made lithopone every particle of the barium sulphate appears to be coated with zinc sulphide and the opacity is much higher than that of a mixture of the dry salts in the same proportion.

The process of manufacture is complicated. The carefully purified solutions of the two salts are mixed; the crude lithopone filtered out, dried, heated to redness and plunged in water. The mixture of lithopone and water is then ground, filtered, dried and re-ground; it is then ready for packing. Every step of the process requires great care and careful regulation of conditions. If properly carried out it gives an excellent white pigment of great "strength," or hiding power. It is largely used in the manufacture of rubber goods, but the general opinion is that it does not give as strong, or resilient, a product as oxide of zinc. Care must be taken that no lead is present in the compound or it will darken seriously.

A good sample of lithopone should contain not less than 28 per cent. of zinc sulphide. It should be a good white, be smooth and free from coarse particles and have good hiding power. For use in rubber manufacture, however, probably the most useful test is to make up a small quantity of the compound.

NEW YORK FIRE RECORD FOR 1912.

The report of Fire Commissioner Joseph Johnson for 1912, recently issued, is an unusually interesting one, as it shows a marked increase in the efficiency of the New York Fire Department; the particularly interesting feature being that this increase of efficiency occurs simultaneously with the increased use of motor vehicles in the place of horse-drawn vehicles in the department.

The number of fires during 1912 was over 1,000 greater than during the preceding year, being 15,633 against 14,547 for 1911; but the fire loss was not only less per fire, but was over $3,000,000 less for the total number of fires. The total fire loss for 1911 was $12,470,806, or an average loss of $855, while the aggregate loss for 1912 was $9,0€9,580, or an average loss of $580, the loss of each fire being nearly one-third less than during the preceding year. The commissioner has contracted for 75 more motor vehicles for the department, as follows:

2	hose wagons	$8,326
16	combination chemical and hose wagons	105,170
3	high-pressure hose wagons	13,875
28	second-size steam fire engines	248,920
1	ladder wagon with 85-foot ladder	8,210
8	ladder wagons with 75-foot ladders	63,152
17	ladder wagons with 65-foot ladders	125,716
	Total	$573,369

The high winds that prevailed during the early part of April had the effect of taking the roof off the plant of the New York Rubber Co., at Matteawan, New York, but no very serious harm was done.

Railroad Air Brake Hose.

By J. S. Sheafe, Engineer of Tests, Illinois Central Railroad.

A PAPER PREPARED FOR THE THIRD INTERNATIONAL RUBBER CONFERENCE, BUT NOT READ.

THE requirements of air brake hose are prescribed by the Master Car Builders' Association so that hose applied to all railroad equipment shall be uniform and up to a certain standard. But air brake hose, as now being manufactured, does not comply with the M. C. B. requirements in other than the physical tests.

For instance, M. C. B. specifications prohibit the use of rubber substitutes. Pure rubber certainly cannot be used at the price paid. Neither can a fair grade of rubber. In calling for a "hand made tube composed of three calenders of rubber," the requirement is not met as hand made tubes and those consisting of three calenders of rubber are only made on special order and at an advance in price. The great bulk of air hose tubes today are single calender and machine made, or "squirted."

In calling for swelled ends more difficulty is met with in the manufacture and a less perfect hose results. The inside and outside diameters should be the same throughout the entire length of the hose.

Air brake hose today is poorer than formerly and both the railroads and manufacturers may be blamed; the former for continually hammering down the price asked for an honest article, and the latter for consenting to attempt the manufacture of an article at a price below that which they know can be fairly met. The quality of air hose of necessity must be improved and both the manufacturer and consumer must work together, making concessions where necessary, for the ultimate mutual good.

Air hose today is sold as low as 30 cents and as high as 50 cents per foot, a difference of 66 per cent. How much can be expected of air hose costing the minimum?

This is a splendid illustration of false economy as the extra number of poor hose lengths necessarily purchased overbalances the increased cost of better hose; this too, when only the relative service is considered. In addition, and directly attributable to cost, should be considered the labor of collecting, shipping, dismounting and fitting up, each of which would not be necessary so frequently to be done with better hose.

The M. C. B. Association, allow a cap from 1/16 inch to ⅛ inch in thickness. A cap of 1/16 inch is better than one of ⅛ inch thickness. Even less than 1/16 inch would be preferable. If the cap is made only thick enough to protect the exposed end of the fabric during the process of vulcanization the clamp used will not overlap the fabric, thus increasing the possibility of hose pulling off of nipple.

Some claim has been made that air hose is quite generally porous. The percentage of porous hose, i. e., those pieces which have leaked and which, on examination, have no evident defect, may be fairly placed at not over 5 per cent. This appears to be a reasonable maximum.

The cause of the largest number of failures appears to be the result of outside injury. Such failures are entirely apart from any inherent weakness of the hose. The "Railway Age Gazette" of April 19, 1912, places the number of such failures at from 65 to 70 per cent. There is good evidence at hand in hose shops to corroborate this statement.

The use of power machines for inserting nipples and couplings into air hose should be discouraged. The inner tube will be cut if there is any roughness to the shank of the nipple or coupling, or if they are out of line in entering. Mounting can be almost as rapidly done by hand and with the certainty that no damage to the inner tube results.

One of the M. C. B. requirements is that the friction between layers of duck shall be such that a 20-pound weight attached to the free end shall, in ten minutes, unwind less than 8 inches, the section being 1 inch in width. Just how far a "high friction" hose is advantageous is a question. Tests made by a large railroad, wherein a machine was used for kinking the hose while under pressure, resulted in a better showing for hose made with little friction than that made to meet the M. C. B. requirement. While this may not prove anything it at least opens up a very interesting point in the subject of air hose. In the same tests, hose with poor friction, gave better results in the bruise test. This bruise test was made by fastening the hose, under air pressure, to an anvil, and causing a 20-pound weight to fall upon it at the nipple end.

There can be no doubt of the deterioration of the average air hose within six months of manufacture. The making of hose to wear well is quite the important part of the manufacturer's problem. No matter how good the hose is at the start if it becomes useless after a few months, the loss to the consumer is immense.

Some rubber manufacturers say that a good stretch test of the tube and cover, combined with a tensile strength requirement, will do more than any other one thing to increase the life of the hose. Tensile strength proposed by these manufacturers varies from 650 to 1,200 lbs. per square inch. As hose in service does not stretch the 200 or 300 per cent., is the stretch test practical? A rubber band will stretch many hundred per cent. and yet its deterioration is rapid.

It would appear that the rubber manufacturers could make a more lasting hose by compounding a tube and cover with just as much or as little flexibility as would be necessary for long life. The minimum amount of flexibility would have to be sufficient to allow bending, without kinking, in coupling up.

It would also appear that the amount of damage caused by pulling hose apart, without uncoupling, is exaggerated. It is probably the universal practice in yards for switchmen and trainmen to thus neglect uncoupling. If an observation will be made in a yard, it will be found, on examining hose so treated, that failure is evident in none of them, provided the coupling has not been jammed and that a wedge has not been made use of to take up leakage in the gasket. As proof of this we have the strength of our air hose, versus the resiliency of the gaskets; the former is much greater.

In considering defective hose, and from which follows a leaky train line blamed on the hose, leaky angle cocks, nipples and couplings must not be lost sight of. They contribute their fair share of the extra burden on the air pump. A more careful inspection of air hose by car inspectors may save damage, as a hose ready to fail may be sometimes removed in time to avoid failures.

Some attention has been given to the question of making air hose with one or more ply woven. This appears likely to be the best hose of the future.

If the manufacturers will produce a hose with an inner tube hard enough to protect itself from the nipple, and a cover hard enough to protect itself from the clamp, both of ability to withstand the action of time and weather for approximately 36 months, and will demand a price commensurate with the ingredients entering into the manufacture, the whole situation will be greatly improved.

WANT AMERICAN LAMPBLACK.

An American consul states that a firm in his district desires to hear from American manufacturers of lampblack, with the object of representing them in Europe. The consular report is No. 10,771.

The Akers Rubber Commission.

WHILE the rubber growing industries of various countries have been the subject of separate investigations, there was felt to be the need of such an inquiry as would contrast the situation in the East and the West, as they appeared to the same observers.

Hence the Akers Commission was appointed by a group of financiers, identified with the Port of Pará and with the Amazon Valley. Prominent among these was the Booth Steamship Co., so intimately connected with the distribution of Amazon rubber.

As briefly stated in the April issue of this journal, the objects of this commission included the detailed investigation of conditions in both the Orient and the Amazon Valley. During about 10 months the commissioners pursued their researches, first in Asia and afterwards in Brazil. The members of the commission were as follows:

ORIENT COMMISSION: Mr. C. E. Akers, Dr. Jacques Huber, Mr. A. Ufenast and Mr. F. Lugones.

AMAZON COMMISSION: Mr. C. E. Akers, Mr. H. C. Rendle and Mr. F. Lugones.

The Orient Commission reached Colombo on December 29, 1911, and arrived back in Europe about the end of May, 1912. Leaving Europe again early in July they reached Pará August 8, and completed their work on October 25.

In two volumes, of respectively 90 and 164 pages, they have reported on their labors in the two principal centers of the world's rubber supply, the Orient and the Amazon valley.

As summarized by the commissioners the objects of their labors were as follows:

1. To give a clear and exact description of the characteristic features of the Lower and Upper Amazon and its tributary rivers as far as the ground could be covered.

2. To investigate the general condition of agricultural industry, and suggest practical means for its development in the immediate future.

3. To report upon the Amazon rubber industry, and to endeavor to find improved methods of administration, collection and preparation, to enable the Brazilian product to compete with that from the Orient.

4. To make a comparison between methods in Brazil and the Orient.

5. To consider the question of labor in the Amazon Valley, and suggest practical means to place it on a cheaper and more effective basis.

6. To formulate practical ideas for the colonization of waste lands.

7. To investigate the cost of establishing one or more experimental plantations or farms.

8. To bear in mind that all work undertaken for development purposes has for its object the creation of additional traffic for the steamship company, docks and other enterprises in which capital is interested.

THE WORLD'S PRODUCTION AND CONSUMPTION OF RUBBER.

Before dealing with the present report under its separate heads of the Orient and the Amazon Valley, it may be of interest to glance at the figures of the world's actual production and consumption of rubber, as estimated by the commission:

The chief interest of these estimates lies in the fact that the predominance of the United States in the consumption of rubber is clearly shown as being nearly 50 per cent. of the total.

According to the following estimate, the western hemisphere at present contributes about one-half of the world's production of crude rubber, and the eastern hemisphere the other half. This position of equality will, however, be gradually altered, through the largely increased yields anticipated from the East within the next few years.

ESTIMATE OF WORLD'S PRODUCTION OF CRUDE RUBBER, 1912.

Country of Origin.	Quantity in tons.	
1. Amazon Valley	42,000	
2. Bahia, Ceara, &c.	4,000	
3. Matto-Grosso, via routes other than the Amazon	600	
4. Peru, Colombia, Ecuador and Venezuela	2,000	
5. Mexico and Central America	3,000	51,600
6. Oriental Plantations in Malaya, Ceylon, India, Burmah, Java, Sumatra, Borneo and Sargon		31,000
7. Africa, West	15,500	
8. Africa, East	6,000	
9. All other sources	900	22,400
Total tons		105,000

(The above figures include all qualities of rubber and caucho, but not gutta percha from India, the Malay Peninsula, Java or Sumatra.)

ESTIMATE OF WORLD'S CONSUMPTION FOR 1912.

	Tons.
1. Europe	48,670
2. United States	47,300
3. All other countries, including Japan and China	2,080
Total	98,000

THE ORIENT.

Based on this general statement, the two separate volumes handle successively the rubber industries of the Orient and the Amazon Valley.

Taking up the Orient, which formed the object of the commission's first attention, it is shown that these 31,000 tons represented the product of 1,530,000 acres; divided as follows:

	Acreage 1912.	Yield tons 1912.
(a) Malay Peninsula	650,000	21,000
(b) Ceylon	225,000	6,000
(c) Southern India	60,000	600
(d) Burmah	40,000	400
(e) British North Borneo and Sarawak	60,000	500
(f) Java and the Javanese Archipelago	230,000	500
(g) Sumatra	220,000	1,700
(h) Dutch Borneo and the Celebes	10,000	.....
(i) Saigon	25,000	300
(j) New Guinea, Philippine and other islands	10,000	.....
Total	acres 1,530,000	tons 31,000

LOCALITY.

From the annexed table it will be seen that nearly 90 per cent. of the acreage under rubber in the Orient is in the Malay Peninsula, Ceylon, Java and Sumatra (1,325,000 acres out of 1,530,000).

In the first two cases, the yield is about 65 and 53 pounds per acre, while in Java it represents on the average 4½ pounds and in Sumatra 15 pounds per acre. From both the last named sources a large increase is looked for in 1914.

ESTIMATE OF PROSPECTIVE YIELDS OF PLANTATION RUBBER.

	Malaya Tons.	Ceylon Tons.	India Tons.	Burmah Tons.	Sarawak Tons.	Java Tons.	Sumatra Tons.	Saigon Tons.	Total Tons.
1912.....	21,000	6,000	600	400	500	500	1,700	300	31,000
1913.....	36,000	10,000	1,000	700	900	1,750	3,500	700	54,550
1914.....	43,000	15,000	2,600	2,000	1,800	10,650	8,000	1,200	84,250
1915.....	63,000	25,000	5,000	3,500	2,500	18,300	12,000	2,000	131,300
1916.....	80,000	30,000	7,000	5,500	5,500	26,550	16,000	3,000	173,550
1917.....	97,500	35,000	8,000	7,000	8,000	32,300	22,000	4,000	213,800
1918.....	113,750	40,000	10,000	7,500	10,000	38,250	33,000	4,750	257,250
1919.....	130,000	45,000	13,000	8,000	13,300	43,650	44,000	5,500	302,450
	584,250	206,000	47,200	34,600	42,500	171,950	140,200	21,450	1,248,150

FUTURE YIELDS.

Since Sir John Anderson, late Governor of the Straits Settlements, made the startling estimate of 75,000 tons as the Malayan yield for 1915, the possibilities of future rubber supplies from the East have commanded the attention of the rubber industry. In this connection the annexed estimate is of particular interest; showing, as it does, a prospective ten-fold growth of plantation rubber supplies within 8 years—from 31,000 tons in 1912 to 302,450 tons in 1919.

COST OF RUBBER PRODUCTION.

The cost of producing a pound of rubber in the Orient is not uniform, but varies with the price of labor, and the facilities for transport. Owing to the fact that many plantations are in a transition stage, it is anticipated that in two years' time, when yields have increased, costs will be materially lower than at present.

Owing to the detailed subdivision of the report, it is possible to compare the estimated cost of producing rubber f. o. b. in four principal quarters in the East:

	English pence.	American cents.
Ceylon	8	16
Malay Peninsula	14½	29
Sumatra	11½	23
Java	14	28

In comparison with these figures is that shown in the other section for Brazilian rubber, of 32½ pence (65 cents American) f. o. b. per pound.

The following general summary deals with the salient features already reported in detail:

"At present Ceylon is the cheapest producer, and in many cases the cost f. o. b. is 6½*d.* (13 cents American) per pound. In view of all existing circumstances, a fair average price f. o. b. for Oriental rubber may be taken at 1*s.* (24 cents American), from the year 1914 to 1919. During the same period the costs from port of shipment to date of sale may be calculated at 3*d.* (6 cents) per pound, making the average aggregate cost on the market 1*s.* 3*d.* (30 cents American) per pound.

VARIETIES OF RUBBER TREES.

The investigations of the commissioners have been confined practically to the cultivation and growth of *Hevea Brasiliensisi*, the production of other varieties, such as *Castilloa*, Ceará *Ficus Elastica*, jelutong and other rubber-bearing trees and vines, being described as insignificant in quantity and value as far as the present or future supply of the European and American markets is concerned.

CLIMATE.

Pará rubber demands a hot moist temperature, with an even distribution of rainfall and an equable climate both night and day throughout the year. These conditions, it is remarked, prevail to a marked extent in the Malay Peninsula, Sumatra, Java, and to a somewhat lesser extent in Ceylon, Borneo, Saigon and various great islands of Oceania. In Southern India and Burmah, marked divisions of the seasons take place, and the distinctive periods of dry and wet weather are less favorable than the more equable distribution of rainfall in the former countries.

PROSPECTS OF CONSUMPTION.

In commenting on the statistics already quoted, showing the world's present annual consumption as 98,000 tons, the report states that the commission understands a fall of 40 per cent. in present values will bring into the market purchasers for an additional 100,000 tons of raw material distributed over the ensuing quinquennial period; this amount being required for street paving and other purposes impracticable while the price exceeds 2*s.* 6*d.* (60 cents) per pound for spot and forward contracts. Therefore, the rapid increase of production which must inevitably come in the five years, 1913 to 1918, will be to a certain extent offset by a great expansion in demand, which, it is added, should prove an important factor in reference to market values in the near future.

SYNTHETIC RUBBER.

In its calculations the commission has only dealt with the natural product, and will not venture to make any prediction whatever as to the part synthetic rubber will take in the development of the situation. However, it is added, the most effective method of fighting this danger is the reduction in the cost of producing natural rubber to the lowest possible figure.

RECLAIMED RUBBER.

With reference to statements made to a member of the commission that the loss of weight in process of recovery should not exceed 5 per cent., and that practically all the sulphur can be extracted at trifling expense—it is remarked that if these statements are correct, the effect on the crude rubber market must be felt severely within a very few years. The anticipation is expressed that the accumulation of old material will be extremely rapid, now that the production from the plantation industry has reached its present stage of development. It is added that if this recovered rubber can be utilized equally well for the manufacture of low grade articles, it will be a decided check to expansion in the consumption of crude rubber, as however cheap the latter may become, the cost of the discarded material will be substantially lower, so long as the price leaves a margin of profit over the manufacturing charges.

THE AMAZON VALLEY.

In the report on the Orient, the Commission has had to deal with facts of a statistical nature already recorded in various forms but not hitherto presented in such a comprehensive way. Within the space of four months this little band of investigators carried on its researches in the various rubber-growing countries of the Orient; the uniform way in which the results have been presented materially adding to their clearness and intelligibility. After a short breathing time in Europe, the Commission took up the work in the Amazon Valley, as recorded in the second volume of the report. In doing so they had the advantage of their previous researches in the East, so as to be in a position to draw comparisons. This second division of the Commission's investigations will be dealt with in the next issue of this journal.

THE COMMERCIAL NOMENCLATURE OF CRUDE RUBBER VARIETIES.

SUGGESTIONS MADE BY THE COMMITTEES APPOINTED BY THE RUBBER CLUB OF AMERICA AND THE RUBBER CONFERENCE.

ONE of the most important topics discussed during the Rubber Conference held in New York last fall was the simplification of crude rubber nomenclature. A committee was appointed, consisting of three members named by the Rubber Club of America and eight members named by the Rubber Conference, to consider this matter and make suggestions. The members of this committee were as follows:

From the Rubber Club of America.—Albert Zeiss of Arnold & Zeiss, crude rubber brokers, of New York City; Arthur W. Stedman, of New York Commercial Co., New York City, and William F. Bass, of the General Rubber Co., Sumatra and New York.

From the Third International Rubber Conference.—Leonard Wray, commissioner for the Governments of British Malaya and Straits Settlements; F. Crosbie-Roles, Ceylon; Cyril E. S. Baxendale, Federated Malay States; Dr. Jacques Huber, of Museu Goeldi, Pará, Brazil; Wilbur A. Anderson, official commissioner from Hawaii; Henry C. Pearson, editor of THE INDIA RUBBER WORLD, New York; Dr. J. C. Argollo, State of Bahia, and Noel Trotter, of the Rubber Growers' Association, Federated Malay States..

Several meetings of the committee were held during the conference week, and tentative lists covering both Plantation and Amazon sorts were submitted. Those lists were not published in these columns at the time, as it was hoped that further action would soon be taken upon them, but as the lists, owing to the fact that the members of the committee are at present so widely scattered, have not yet been revised, it may be of interest to many in the trade to see them, though still in tentative form. They are as follows:

MIDDLE EAST PLANTATION SORTS.

SCIENTIFIC NAMES.	TRADE NAMES.
Malay Hevea Sheet (or biscuit)	Rambong—Sheet
" Smoked Sheet	" Crepe
" Block	" Ball
" 1st grade Crepe or blanket	" Lumps
" 2nd grade Crepe (Mottled)	" Scrap
" 3rd grade Crepe (Brown)	Manihot—Sheet
" 4th grade Crepe (Black)	" Crepe
" Scrap (untreated)	" Scrap

(Or Ceylon, Java, Sumatra, Burma, India, etc.)

The following list of names for Amazonian rubbers was submitted:

AMAZONIAN RUBBERS.

SCIENTIFIC NAMES.	TRADE NAMES.
(A.) AMAZONIAN HEVEA RUBBER.	
1. AMAZONIAN HEVEA BRASILIENSIS RUBBER.	
Amazonian smoked Hevea Brasiliensis rubber	Amazonian fine Hevea
Upriver Sorts:	Upriver
Bolivian smoked Hevea Brasiliensis rubber	Bolivian fine
Peruvian " " " "	Peruvian fine
Acre " " " "	Acre fine
Matto Grosso " " " "	Matto Grosso fine
Amazonas { Javary " " "	Amazonas fine
Amazonas { Jurua " " "	(Javary, Purus, Jurua,
Amazonas { Madeira, etc. " "	Madeira, etc.)
Middle River Sorts:	
Tapajos { upper / lower smoked Hevea Brasiliensis rubber	Tapajos fine
Xingu { upper / lower " " " "	Xingu fine
Islands Sorts:	
Pará Islands smoked Hevea Brasiliensis rubber	Islands fine (extra dry common)
Badly smoked Amazonian Hevea " "	Medium or extra fine
Coagulated Sorts:	
Matto Grosso alum coagulated H. Bras. rubber	Matto Grosso Virgin
Pará spontaneously coagulated " " "	Cameta
H. Bras. rubber, prepared by the process of Cerqueira Pinto	Cerqueira Pinto's extra fine Hevea
Air Dried Sorts:	
Upriver air dried Hevea Brasiliensis rubber	Upriver coarse
Pará " " "	Islands coarse (Scrap and Negrohead)
AMAZONIAN HEVEA RUBBER FROM OTHER SPECIES THAN HEVEA BRASILIENSIS.	
Smoked Sorts:	Weak fine Hevea
Rio Negro smoked weak Hevea rubber (different species)	Rio Negro weak fine (different grades)
Peruvian smoked weak Hevea rubber	Peruvian weak fine (Mollendo Peruvian dibil)
Bolivian (Sorata) (H. Peruvian 1st grade)	Bolivian weak fine
Purus smoked weak Hevea rubber	Purus weak fine
Pará " " " " (from H. Guayanensis)	Pará weak fine

SCIENTIFIC NAMES.	TRADE NAMES.
Coagulated Sorts: None.	
Air Dried Sorts:	
Rio Negro air dried Weak Hevea rubber	Rio Negro weak coarse
Pará " " " " "	Pará " "
Putumayo " " " " " (from Hevea Foxii)	Peruvian tails
(B.) AMAZONIAN CASTILLOA RUBBER—CAUCHO.	
Air Dried Sorts:	
Bolivian air dried Castilloa rubber	Bolivian caucho
Peruvian " " " "	Peruvian caucho
Matto Grosso air dried Castilloa rubber	Matto Grosso caucho
Acre " " " "	Acre caucho
Amazonas (Javary, Jurua, Purus, Madeira, etc.)	Amazonas crude
Pará (Xingu, Tapajos, Araguaya)	Pará caucho
Coagulated Sorts: caucho slabs.	
Caucho prepared with Cerqueira Pinto's process	Cerqueira Pinto's caucho
(C.)—BRAZILIAN MANIHOT RUBBER	Manisoba rubber (sheet crepe scrap)
Produced in the States of Ceará, Piauhy, Pernambuco, Bahia, Minas Geraes. If desired, the name of the producing state can precede the name of the grade instead of the name of the country.	
1. Brazilian Manihot Glaziovii rubber	Ceará rubber
Brazilian { alum coagulated / acid coagulated } Manihot Glaziovii sheet	Ceará sheet
Brazilian { alum coagulated / acid coagulated } Manihot Glaziovii crepe	Ceará crepe
The alum or acid coagulated varieties would of course be specified in the contract.	
Brazilian crude or naturally coagulated Manihot Glaziovii	Ceará scrap
Brazilian naturally coagulated Manihot Glaziovii, washed	Washed Ceará scrap
2. Brazilian Manihot dichotoma rubber	Jequié rubber
Brazilian Manihot dichotoma sheet	Jequié sheet
" " " crepe	Jequié crepe
" crude or naturally coagulated Manihot dichotoma	Jequié scrap
" naturally coagulated and washed " "	Washed Jequié scrap
3. Brazilian Manihot Piauhyensis (and heptaphylla) rubber	Piauhy rubber
(D.) HANCORNIA RUBBER. (MANGEBEIRA.)	
This is the usual variety	
Alum coagulated Hancornia rubber	Mangabeira slabs
" " " " crepe	Mangabeira crepe

The lists given above were offered simply as suggestions and as basis for discussion. It is quite possible that these names may be materially changed before they are finally accepted by the people most interested in this subject, but this action taken by these members of the committee constitutes at least a substantial beginning in an undertaking of prime importance. A commercial nomenclature for crude rubber varieties that shall be generally accepted and used will certainly prove of vast convenience to the rubber industry.

At one of the committee meetings it was also suggested that it was the sense of the committee that all plantation sorts should be branded with the name of the estate on every piece and delivered to the manufacturers in the original cases. The claim that chips were often found in plantation rubber was thoroughly discussed, the suggestion being made that the cases be lined with cloth or paper treated with something analogous to paraffine. No decision was reached, as it was the thought of practical planters present that such lining would exclude air and cause stickiness. It seemed to be the sense of the planting interest present that the chips came not from the original cases in which plantation rubber was shipped, but from the sorting and shipping in larger and rougher cases in which the rubber is delivered to the American rubber market.

STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, circulation, etc., of THE INDIA RUBBER WORLD, published monthly at New York, required by the Act of August 24, 1912.

Editor, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Managing editor, John P. Lyons, 150 West Ninety-first street, New York City.

Business manager, Edward F. Pfaff, 94 Hawthorne street, Brooklyn, New York.

Publisher, The India Rubber Publishing Co., 15 West Thirty-eighth street, New York.

Owner, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

(Signed) EDWARD F. PFAFF, Business Manager.

Sworn to and subscribed before me this 28th day of March, 1913. (Signed) HELEN HEROLD, Notary Public,

(Seal) Kings County No. 162.

Certificate filed in New York County. Term expires March 30, 1913.

Kings County Registers Certificate No. 882, New York County Registers Certificate No. 3082. (Commission continuous.)

The Obituary Record.

FRANK E. HALL.

IN the April issue of THE INDIA RUBBER WORLD there appeared a brief notice of the death of Frank E. Hall, which occurred in March. It is possible now to give a more adequate account of his active and interesting life.

Frank E. Hall, for many years prominently identified with the rubber industry, was born in Boston, May 20, 1852, the eldest son of Henry A. and Amelia W. Hall. His father was one of the pioneer retail rubber merchants, and from his business grew the Hall Rubber Co., for many years among the leaders in the trade.

The son, Frank, early in life showed marked mechanical and inventive genius, and during his sixty years of life was responsible for many improvements and inventions of more or less value. Entering the business world at the age of 19, he almost immediately established a retail store at Portland, Maine, which he continued to run until his father's death in 1879, which compelled him to take charge of his father's affairs, and his own store soon became a branch of the larger firm, and the name of the latter was changed to the Hall Rubber Co.

About two years later he established a factory at Bemis, Mass., and for the next ten years devoted much of his time to the manufacture of the highest grade of clothing. He retired from the rubber business in 1890, selling out to the Stoughton Rubber Co. From then until 1898 his interests varied until again he entered the rubber field with the Newton Rubber Works Co., in the tire business.

His ingenuity was responsible, among other things, for the first hose nozzle capable of various streams from one pipe, the first dull finished rubber boots, the rubber lined rubber boots, the first mackintosh goods of American manufacture, the block, or sectional tire so prominent on motor trucks and several improvements on ball and socket buttons to make them practical on heavy clothing.

He was married in 1874 to Lucy A. Sprague, of Bridgewater, Mass., and they are survived by three children, Stanley F., associated with the Kelly-Springfield Tire Co.; Harry B., with the Boston Belting Co., at Portland, Oregon, and Amelia F. Pillsbury, of Prince Rupert, British Columbia.

The last few years of his life were spent in Wollaston, where he purchased the old Quincy homestead, and where he died, March 14, 1913, just two years after the death of his wife.

ISAAC B. KLEINERT.

Isaac B. Kleinert, president of the I. B. Kleinert Rubber Co., died at his home, 31 West 87th street, New York City, on April 18th in his 84th year. Mr. Kleinert was born in Borek, Prussia. He came to this country in 1850 and soon became interested in manufacturing enterprises. About thirty-three years ago he took up the manufacture of dress shields. At that time the articles of this description most used in this country came from France, and there was at first considerable prejudice against any other kind; but Mr. Kleinert rapidly overcame this prejudice and built up a large business in this particular article. About twenty years ago, the I. B. Kleinert Rubber Co. was incorporated, with its principal factory at College Point, Long Island. The company soon established branches and selling agencies, not only in Europe, but in various other parts of the world.

Mr. Kleinert was not only a successful manufacturer, but he was a philanthropist, and took a deep interest in the welfare of all his employees. Their regard for him was shown on his 75th birthday, which occurred on August 19, 1905, when he was presented with a massive silver loving cup, to which 1,200 of his employees had contributed.

FRANK E. HALL.

ISAAC B. KLEINERT.

ADOLF PRINZHORN.

ADOLF PRINZHORN.

On March 28 Adolf Prinzhorn died at Stuttgart, Germany. Having been for thirty years a member of the board of the Hanover corporation, the "Continental-Caoutchouc und Gutta-Percha-Compagnie" he was one of the leaders of the industry. His death constitutes an irreparable loss for the company towards the development of which his remarkable technical and commercial capacity had largely contributed.

After retiring from the board, his experience continued at the service of the company as a member of the committee of inspection. He was beloved alike by his colleagues and by the working staff of the concern.

Adolf Prinzhorn will long be honored, as intimately connected,

not only with the growth of his company, but with that of the entire rubber industry.

WILLIAM J. CABLE.

The death in announced of William J. Cable, who passed away in Seattle, Washington. He was the son of Wheeler Cable, who founded the Cable Rubber Co. and who died in 1899, William J. succeeding to the presidency of the Cable Rubber Co. This company failed in 1905, since when Mr. Cable had various rubber connections, chiefly in the West. He is survived by a widow and two daughters.

JOHN BROWN.

John Brown, who was associated with the Boston Rubber Shoe Co. for 32 years, during the last few years being connected with its New York warehouse, on Thomas street, died in New York about the 15th of April.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE directors of the B. F. Goodrich Co. met on April 23, for their regular quarterly session. According to their earlier plans, as announced at the annual meeting, the dividend on the common stock was passed. Mr. Work, president of the company, says that the general condition, so far as the Goodrich company is concerned, is much improved, and that the Akron plant is running closer to capacity than six months ago, and that the outlook is excellent.

In connection with the cut in prices of tires, Mr. Work says: "All the larger manufacturers have followed our lead, although I understand that one of the smaller companies has announced that it will not order any cut. It should be borne in mind in the talk of slashing tire prices that the price of crude rubber to-day is much lower than it was a year ago. High grade Pará is now selling close to eighty cents a pound, and a year ago it was one dollar a pound." Mr. Work expressed the opinion that as a result of the lower price of crude rubber, a 5 per cent. tire price cut ordered the first of the month will leave practically the same margin of profit to the manufacturer as obtained a year ago. The actual consolidation of the Diamond and Goodrich plants did not become operative until April 1, 1912. Mr. Work did not wish to commit himself as to the length of time he thought the common dividend would be suspended, although he is inclined to be optimistic. He made it very plain among the Board of Directors as to the advisability of passing the common dividend, it being the common desire of the Board that a good-sized surplus be built up before resuming payments on the common stock.

At a meeting of the directors of The Miller Rubber Co., held in Akron, April 17, the $200,000 treasury stock was placed on the market, present stockholders of Miller stock being allowed to subscribe for 25 per cent. of their present holdings at par. It was also decided to submit at an early meeting of the stockholders the question of doubling the capital of the company, thus increasing the present one million capital to two million; said increase of stock to consist of 5,000 shares of common stock at the par value of $100 each, and 5,000 shares of preferred stock at the par value of $100 each.

The company is just completing buildings which will practically double the floor space of the factory, and with the machinery already delivered or ordered, the company will be in a position to manufacture approximately 1,000 automobile tires per day, and also to increase the output of other departments.

The following is a summary of the report made by the Probe Committee selected by the Ohio State Senate about April 15:

That the Industrial Workers of the World teach among other things the following doctrines:

All employes shall belong to one general union.

No contract providing for wages or conditions of employment shall be entered into for a definite length of time between employer and employe.

That the doctrine of sabotage is a matter of grave public concern, not only to the state of Ohio but to the nation at large, and that the line of distinction between this doctrine and anarchy is so indistinct as to be almost imperceptible.

That the leaders of the I. W. W. instead of helping the striking employes of the rubber factories of Akron, did them much injury, and are largely responsible for their failure to secure a redress for any wrongs which may have existed and the adjustment of any grievances.

That the testimony of the employers and employes shows that the wages paid by the rubber companies generally compare favorably with those paid in other industries, and that the wages paid in the tire building and tire finishing departments are higher than the amount paid in other industries where like skill and effort are required.

That the strike which originated in the tire department of the Firestone Tire & Rubber Co. and spread to other companies, could have been averted had there been a reasonable amount of time between the date on which the notice for readjustment of prices was posted and that fixed when it would take effect, so as to insure due deliberation and conference.

That analysis of the conflicting testimony concerning the so-called "speeding-up" system would seem to justify the conclusion that it could be wisely dispensed with, because it is fraught with danger both to employers and employes.

That few violations of the state law regulating the hours for women employes were developed in testimony taken; but that in view of the general tendency toward shorter hours of employment in all industries, the complaints regarding the long hours of employment at night are justifiable.

That as the most striking feature of the evidence was the fact that the employes refrained from submitting grievances for adjustment, because of fear of discharge, the committee suggests that notices be posted in the factories advising employes that they may submit any complaint with the assurance that they will not be discriminated against.

That no evidence was adduced showing that a list was kept by the factories for "blacklist" purposes.

That the evidence taken showed that the earnings of the rubber manufacturers have been and are such as to justify the payment of high wages to employes and the maintenance of good conditions in their factories.

That the buildings of the rubber companies are practically fireproof, well lighted and so constructed as to provide for good ventilation. In closing, the committee reports that the investigation has proven of great value to the rubber manufacturers, the employes and the general public.

"The publicity," observes the report, "attending the investigation and the facts collected are of great value to the general public. In addition, the data collected will prove to be of incalculable value to the industrial committee and also the Legislature and succeeding ones which may give consideration to questions affecting the relations of capital and labor."

The committee acknowledges the co-operation and courteous treatment accorded it by the rubber manufacturers, the representatives of the companies and the people of Akron as a whole.

* * *

Dr. C. M. Knight, who has spent much time in rubber research and in building up the rubber chemical department of Buchtel College, has resigned as Professor of Chemistry in that institution. Professor Knight has been actively engaged in chemical research for the last thirty-eight years. He will continue with the college in an advisory position, but will retire from active labor. Prof. H. E. Simmons has been elected by the trustees to fill the vacancy.

Dr. Knight was born in Dummerston, Vermont, in 1848. He graduated from Tufts College with the degree of A. B. in 1873, and received his master's degree in '78. He also took graduate work at Harvard and the Massachusetts Institute of Technology.

In 1875 he came to Buchtel and was the instructor in natural science until 1883, when he was transferred to the work of the physical science department, which position he held until his recent resignation.

For a number of years Dr. Knight has been dean of Buchtel, and for one year, '96-'97, he was acting president of the college. About two months ago, the trustees conferred upon him the degree of Professor Emeritus of chemistry and dean emeritus of the faculty.

Professor Simmons, who will take Dr. Knight's place as the head of physical science department, was graduated from Buchtel in 1908, with B. S. degree, and for four years was a student under Dr. Knight.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

GENERALLY speaking, business is hardly up to normal for this season. Various causes are suggested, but the principal one seems to be that the rubber business is in few respects different from others, and that all lines are marked by conservatism in buying. To be sure, the tire business is the exception. With thousands of new automobiles going into commission, and tens of thousands being put in order for summer service there is necessarily a pressing demand for tires, and the factories are working overtime in their endeavors to catch up with their orders.

But even in the tire business there are some signs of a letting-up in the demand, and this is not unwelcome to the over-taxed factories. The marked decline in crude rubber prices has been quite thoroughly published, and one effect has been that many users of cars are delaying the purchase of extra tires, hoping that the less cost will reduce the selling prices still further. The views of manufacturers' agents here, however, are to the effect that as the rubber now being put into tires was bought at higher prices, it is not at all probable that any saving will be available to the retail purchaser for some months to come.

There is a little better business doing in mechanicals, and druggists' goods are going well. Garment manufacturers are busy, but there is not quite the usual activity of the spring season. In footwear the tennis demand is good, but rubber boots and shoes are dull. Retail stocks were carried over, and therefore these will be available for next season's trade, while those who have had only moderate stocks, and have cleaned them well up, seem to realize the risk of ordering early, and fewer than usual are expected to take the advantage of the extra five per cent. by placing heavy orders previous to the time limit for securing this discount.

* * *

The trade extension trip of the Boston Chamber of Commerce has not met the wide and hearty enthusiasm which was hoped. Originally it was expected that there would be at least eighty who would participate. Instead, less than half that number were listed for the tour, which started on the "Metapan" on Thursday, the 24th ultimo. Among the reasons given for this falling off from the expected number were mainly the expense of the trip, the long-required absence from business and the uncertainty of commercial conditions, owing to changes in the tariff, trust prosecutions, etc. Several prominent business men who had at first signified their intention of making the trip, later decided it inadvisable to do so. The rubber business is represented by Edward T. Smith, of the Iroquois Rubber Co. of Buffalo, who goes as the accredited representative of the United States Rubber Co.

* * *

Ira F. Burnham, president and treasurer of the Stoughton Rubber Co., with Mrs. Burnham, started April 9 on a trip to the Pacific Coast. While this is essentially a pleasure trip for Mr. Burnham, he will probably call on several of the principal jobbers of rubber goods with whom the company does business.

Back of Mr. Burnham's desk at the office is a framed motto, or axiom, or proverb, or maxim—call it what you will—which is so self-evident and suggestive that your correspondent copied it for reprinting here, simply as missionary work. It says: "No one ever got a dividend out of a quarrel."

* * *

The Marlboro Rubber Store at Marlboro, has been purchased from Mrs. Barnard by William G. Riecke of Southboro, who will hereafter run the business. M. W. Weeks, who has been managing the store for some time, will, for the present, continue at the store. He is showing his friends a handsome gold watch, a present from Mrs. Barnard in appreciation of his faithful conduct of the business.

* * *

The case of Geo. A. Alden & Co., which would seemingly be in the jurisdiction of James Munroe Olmstead, referee in bankruptcy for Suffolk County, because the firm's business headquarters were in Boston, has been transferred elsewhere, because of the residences of the members of that firm. The proceedings will be heard in Norfolk County, because George E. Alden lives in Wellesley, in that county. Arthur W. Stedman lives in West Roxbury, Adelbert H. Alden in New York, Fred W. Dunbar in Montclair, N. J., and J. Frank Dunbar in Wakefield, Mass.

* * *

Mrs. Robert Dawson Evans, widow of the well-known rubber man, who gave $500,000 in 1911 to pay for a memorial building for her husband, the same to be an extension of the Boston Museum of Fine Arts, has increased her generous gift to $825,000, in order that the memorial may be handsomer and more complete in its appointments, and enlarged by an additional building, 53 feet wide and 109 feet long. This will be a lasting and imposing memorial to the late Mr. Evans.

* * *

The Springfield (Mass.) Rubber Co. had a fine exhibit at the Industrial Exposition in that city early last month, its booth being a center of attraction from the opening to the closing hours. Rubber in all states, from the Pará biscuit to the finished products, was exhibited, and a working demonstration of making rubber boots and shoes kept people interested. The demonstration was in charge of John J. Hawkins, of the United States Rubber Co., who was busy showing, explaining and answering questions, as the boots and shoes were being made up from the various parts which were cut out at the mill of the Boston Rubber Co. of Malden.

* * *

The Monatiquot Rubber Works Co., of South Braintree, Mass., celebrated their third anniversary on April 19, and invited the town people to be present in order that the progress of the concern might be noted. The large number of guests who attended and the intelligent interest shown was very gratifying to the company officials. The mills were kept in operation and the visitors had an opportunity to see a batch of "Squantum" going through process. Those who had attended were shown the additions of the year, namely, three new brick buildings and a reinforced cement dam, besides alterations in the older buildings which have brought them up to modern efficiency. In addition there is under construction a brick storehouse. At the conclusion of the inspection, souvenirs were presented to the ladies and their escorts. In the evening the company gave a dinner and a theater party to the various officers and department heads.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

THE tariff is not seriously disturbing the rubber trade in Chicago. Rubber men here, as a rule, are too busy to think about what effect the tariff will have.

Rubber hose is about the only line that is not flourishing; but this is not worrying the dealers any. The sun is becoming hot and almost every day commuters may be seen loaded up with seed catalogues, or gardening implements and packages of seeds, and this means that the garden is in the making, and that the garden will have to have water, and the owner of that garden will have to have hose. A feature which should have a bearing on this trade was a story published in one of the Chicago dailies. This was to the effect that Hull House, a social settlement, had arranged with owners of vacant real estate to have the free use of this space for the use of the working people of this city. This vacant property is to be tilled and cultivated, and there is no doubt that rubber hose will be wanted for the irrigation of those lots. Of course this is a minor matter, but it will help the hose trade in local circles.

The weather has been decidedly favorable for makers of rubber garments and rubber shoes. For almost a week it has rained and there has been a great demand for rubber coats and rubber shoes. The demand for rubber garments has been much increased this spring. The public at large is taking to the new rubberized coats, and a good many economical young men—and young women, too—who cannot afford a spring coat are buying these coats and making them do double duty.

The demand for automobile tires has fallen off considerably of late, strange to say. One would think with the spring of the year approaching, and with the autos all on the road, the demand for these goods would increase. Jobbers, however, say they find a noticeable let-up in the buying. This is attributed a good deal to the recent cut made in prices. Buyers noting that prices had been cut are rather nervous about laying in supplies for future needs, fearing a further cut in values, and this has made the demand of a "hand-to-mouth" character, so to speak.

Your correspondent in his tour among the dealers found them almost uniformly taking a cheerful view of the situation. The Chicago Rubber Co. said: "Trade has been good in all lines. The wet weather has been a boon to our trade of late. Rubber coats met with a surprisingly good demand. The demand for automobile tires has slowed up somewhat. The recent cut in prices has made buyers cautious and they have been limiting their purchases to immediate requirements. They probably anticipate a further cut, and for this reason they do not care to be caught with a lot of high priced goods on their hands."

R. D. Evans, of the Picher Lead Co., was enthusiastic in his reports on business conditions. He said: "As far as we are concerned business is booming. The only trouble I can find is that our trade is bothering the life out of us for shipments. The situation in Akron, Ohio, is clearing up and factories there are running normal." The representative of the Chicago Rubber Works said that the demand for all lines was good and trade conditions were greatly improved. Mr. Simons, of the W. D. Allen Co., said: "Trade is good. We have had and are still having a good call for all brass hose accessories."

E. F. Lindley, representative of the Raven Mining Co., with offices in the Marquette building, is now in Utah visiting the mines of his company. He is expected back in a week or two.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

WHILE the flood which prevailed in this section tied up business in all commercial lines, the rubber footwear and rubber clothing jobbers and manufacturers experienced the busiest season of the year. The extensive stocks carried by local concerns have been depleted, and rush orders have been placed for complete inventories. With the flood situation about over and business returning to a normal condition, the local tire houses are facing a demand for goods in excess of the supply. All orders are "rush," and in consequence there are busy scenes around the local tire houses, as the extra demand for goods to replace those which were destroyed or lost by reason of the flood, coupled with the opening of spring weather and active buying of automobiles, has increased business beyond expectations.

* * *

Though long rumored and looked for, the formal announcement of a reduction in price of automobile tires came unexpectedly at this critical time from the Diamond Rubber Co. and the Goodrich Rubber Co., on April 1. Automobile tire users could not believe the big announcements, appearing in the local newspapers, that the price had been cut, and throughout the day it was treated locally as an "April Fool" joke. For the greater part of the first day after the announcement appeared, Manager C. W. Simpson of the Diamond and B. M. Lovell, manager of the Goodrich, were kept busy assuring customers that the announcement was *bona fide*. As a result of the unexpected cut the telegraph wires were kept hot by managers of other tire factories, wiring headquarters of the announcement, and inquiring if they intended to follow. As a result of the cut, competition in the tire business in this section has been very keen, and local tire men are closely watching the result, and many make the statement that the announcement of the two big tire factories of a cut in price is the forerunner of a price-cutting war.

While the Firestone Tire and Rubber Co. did not advertise a cut in the price of their tires, managers and agents of the company were instructed that the price had been cut to meet that of the Diamond and Goodrich.

* * *

Rubber footwear manufacturers have joined hands with the leather shoe manufacturers to assist dealers in the flood zone in rebuilding their business by extending credit for practically an indefinite period. An agreement has been secured from the manufacturers by the Ohio Retail Dealers' Association which has a committee working with the manufacturers. The flood has wiped out shoe stores from the upper end of the Ohio to the Mississippi. It means that the customer for years must have credit and long time credit at that.

Perhaps one of the heaviest losses caused by the Dayton flood will be the Barney & Smith Car Works. The mammoth plant of this concern was completely inundated, and while the exact loss has not been fixed, it is estimated that it will reach half a million. Thousands of dollars' worth of air brake hose, packing, rubber springs, rubber treads, and tiling which are used in the manufacture of railroad coaches was destroyed, and on account of the terrific current during the flood period most of the supplies on hand were carried off by the water.

The Atlas Rubber and Belting Co., at 212 Walnut street, while located in the flood zone, enjoyed a rushing business during the high water. With water swirling around the front door of the building where the company is located, it was supplying the needs of flood-visited business houses with washout hose and other rubber goods that are most essential in high water times.

With but one or two exceptions the recent flood through Ohio cost the various rubber companies vast sums, as most of the companies operating branch houses in this city operated supply stations in Hamilton, Dayton and other smaller cities that were located in the flood zone. Notwithstanding the heavy losses suffered by the rubber companies, these same companies were the first to respond to the call for help that came from the stricken cities. Among the first company to come to the aid of the flood sufferers in Dayton was The B. F. Goodrich Co., which promptly sent a full car load of rubber boots and tires.

One of the "hard hit" concerns in the Dayton flood was the I. J. Cooper Rubber Co., whose headquarters are located here. A large stock of the company's Racine and Motz tires floated away and were given up as permanently lost. Now, however, these tires are "floating" back in a unique way. One of the tires had taken a swim clear to Miamisburg, 12 miles from Dayton, and had been lodged there for days in the top of a tree. It was returned later with the compliments of the owner of the tree. Two other tires were restored by a young woman who found them in her sitting room in the second story of the Knecht House, at Dayton.

The Ohio Rubber Co., of Cleveland, having a large retail house here and a sub-office at Dayton, suffered a heavy loss as the entire office of the company was submerged and for a time it was feared that the employees of the office had lost their lives in an effort to save the stock. Later, however, it was found that the employees escaped, but not until they were compelled to use boats to get to dry land.

Captain J. F. Ellison, formerly of this city, and now operating head of the Amazon Navigation Co. (Companhia Navegacao do Amazonas), with headquarters at Pará, has written a letter to President Draper of the Cincinnati Chamber of Commerce, stating that business conditions are not so good on account of the declining price of rubber. Captain Ellison's letter in part is as follows: "I note that you have established a foreign trade department and now don't consider that which follows as a kick, but only as a suggestion, inspired by personal knowledge of conditions, and the usual practice carried out by the merchants and manufacturers in the States. Almost invariably letters and circulars reach this country with only the ordinary domestic postage thereon, and while in my particular case I am always delighted to pay anything within reason to get a letter from home, you can appreciate that to a merchant whose business is being solicited, it is not pleasant, nor does it give him a good idea of the ability of a particular firm that sends him communications without proper postage being placed thereon. The practical amalgamation of the Amazon Steam Navigation Co., and the Amazon Navigation Co., has now been consumated, the former company being the operating company and the Ca. Navegacao do Amazonas the holding company. General business conditions in North Brazil are none too good. The steadily declining price of rubber, which is practically the sole output of the Amazonas, is having an effect. This effect is not temporary, but due to the amount of cultivated rubber coming into the markets of the world from the Far East, and is a permanent condition which North Brazil has made no preparation to meet. It is the opinion of men who should and do have vastly more weight than the writer, that Amazonas is facing a rather serious crisis. Cost of living is excessive here, which naturally means high wages for every one; and living expenses cannot be reduced until this particular part of Brazil puts itself in position to produce its own food supply. The climate here from my viewpoint is wonderful. In over a year I have never seen the temperature above 92 degrees in the shade, or lower than 75 degrees, the usual range being from 80 to 85 degrees."

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The suggestions contained in an editorial published in THE INDIA-RUBBER WORLD several months ago on the question of a revision of the United States patent laws, and the better protection of inventors with reference to their inventions being bought up only to be put in the "discard," have local illustration in the incorporation in this city of the "National Society For the Promotion of Invention and the Useful Arts." The incorporators are Drs. William P. Murray, C. N. Bradford and Arthur Ewald. The purpose of the company is the protection and advancement of the interests of inventors, through the organization of a society of inventors. The company is incorporated for the nominal capitalization of $1,000 and will not attempt at the outset to finance inventions, but will attempt to prevent valuable ideas being taken from their originators or being purchased but never manufactured.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

OLIVER H. BLAISDELL, master mechanic at the factory of the National India Rubber Co., in Bristol, is one of the few men who have served upwards of a quarter of a century with the corporation. Mr. Blaisdell has been with the National India Rubber Co. for almost 28 years, going there in 1885 as chief engineer. Ten years ago he was promoted to master mechanic.

Mr. Blaisdell was born in Alton Bay, New Hampshire, in 1843, but a few years later his parents moved to Portsmouth. Finishing his schooling when he was 13 years old, he went to work in a shovel factory, remaining there until the war broke out in 1861. At the age of 18 he enlisted in the Fourth Massachusetts Infantry, serving three months. He returned home and at once enlisted in the United States Navy. He was assigned to the United States gunboat "Sunflower" and served nearly two years on board that vessel. Mr. Blaisdell was a first-class fireman in the navy, which is equivalent to assistant engineer ashore.

After the war he was employed as engineer in several different manufacturing plants. He moved to Bristol in 1885 and since then has had charge of all the steam engines, machinery shops and pumping outfits for the National company. His son, Fred G. Blaisdell, is one of the engineers at the company's factory.

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Another employee who has been long in the service of the National India Rubber Co. is Capt. Patrick H. McGovern, who is rounding out his 40th year with that corporation. He worked his way from an assistant in the store-house of the company—when it was known as the National Rubber Co.—to yardmaster, a position which he has held for the last 20 years.

Capt. McGovern is an expert in moving large pieces of machinery and buildings and has an original way of rigging purchases which for many years has proved successful. He has a diversity of duties in his position as yardmaster. The live-stock, moving gear, tools and the care of the fire-fighting apparatus come under the yardmaster's care. When any machinery needs to be shifted from one part of the big factory to another Capt. McGovern takes it in charge. Last year when a portion of the appurtenances of the Bristol factory were moved to Cleveland and other places, the yardmaster moved the great vulcanizers and other machinery to the railroad yards, and directed the loading of them in freight cars. Capt. McGovern acquired his title by reason of his having served as commanding officer of former Company C of the Second Regiment of Infantry of Bristol.

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James Taylor, formerly employed in the National India Rubber Co., died of pneumonia, March 28, at the home of his daughter in East Providence. Mr. Taylor was 58 years old and had been employed by the company 35 years, retiring a few years ago.

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Operations were resumed at the factory of the National India Rubber Co., April 14, after a shut-down of two weeks, for the purpose of taking the annual inventory. More than 1,200 hands went to work. While the factory was closed many improvements were made in the buildings, including painting, carpentering and masonry. An addition is being built to the wire-drawing room. The company is shipping large quantities of insulated wire to Dallas, Texas, and other parts of the South.

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Work was resumed in the Alice and Millville mills of the Woonsocket Rubber Co., April 8, after a week's shut-down.

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The Goodyear Tire Co. has acquired control of the Killingly Manufacturing Co., at Killingly, Conn., and they plan to manufacture 1,000,000 yards of tire duck at the plant each year. The company is reported as using 8,000,000 yards annually. They are to equip the mill with new machinery.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

CONSIDERING the time of the year business with the rubber establishments is fairly good. Everyone is hoping for rain; there have been four comparatively dry years, and a series of big rains would do wonders for the State.

R. H. Pease and wife are now in New York, where they will remain for a month. R. H. Pease, Jr., sailed on April 19 on the liner *George Washington* for Europe, and contemplates making a two months' stay visiting European cities.

The Ralphs-Pugh Co., of 502 Mission street, has taken on the

Beacon Falls Rubber Shoe Co.'s line and will carry a complete stock. They have also made arrangements to act as Pacific coast agents for the Hodgman Rubber Co., of New York, and will carry a complete line of their druggists' sundries in San Francisco.

The Pennsylvania Rubber Co. is now making provisions for handling the Pennsylvania V. C. truck tires on this coast from its branch here, and George Muther, who has been chief clerk for the past three years is to be manager of the new truck department. This truck tire with its patent demountable construction makes it possible to change tires as easily as the ordinary tire, and is an innovation in truck tires, so that Mr. French, the manager, believes that the new department will be a big success from the start. Mr. Muther is a reliable and efficient rubber man with long business experience.

The Asbestos Rubber & Supply Co. has consolidated with the Plant Rubber & Supply Co., and the business will be conducted under the name of the Plant Rubber & Supply Co.

Mr. Nat Dodge, the new vice-president and general manager of the American Rubber Manufacturing Co., whose offices are in San Francisco, reports that an additional brick building will be constructed adjacent to the two big brick buildings which now constitute the factory at Emeryville. New machinery is being installed, including a new calender, new mills, a 25-foot belt press, and belt making machinery, so that the capacity of the plant will be nearly doubled. The excellent increase in business warrants him in believing that there will have to be still further increase in the matter of facilities. This establishment is going especially after the belt business.

Bissell & Roch is the name of the new vulcanizing firm at Marysville, Mr. Roch having bought a half interest with B. L. Bissell.

The Miller Rubber Co., of California, has been incorporated with a capital stock of $10,000, with its principal place of business in San Francisco.

William Perkins is no longer connected with The Goodrich Rubber Company, having made plans to start in for himself with a new rubber heel which he has invented.

Charles Gilbert, Pacific coast manager for the United States Tire Co., was married in Hanford last week, to one of the most attractive young ladies of that city. Mr. Brady, of the Gorham-Revere Rubber Co., acted as best man.

Mr. Sawyer, of the Sawyer Belting Co., of East Cambridge, is now visiting the principal points of interest on the Pacific coast.

Considerable talk has been heard recently among the men in the rubber business of forming a club for social purposes only. The regular trade association has fallen into disuse, and as its real benefits were chiefly from the social end it has been deemed advisable to have for the chief object of the new club, monthly luncheons at which the members may all meet together.

The Oregon Packing & Rubber Co. has been incorporated at Portland, Ore., with a capital stock of $15,000.

The Firestone Tire & Rubber Co. is now installed in its fine new building on upper Van Ness avenue. This company had built a special building not long ago, and had not occupied it long when the property was taken over by the city, as part of the new civic center site. This was not so unfortunate for the Firestone people as might appear, because they had found that they hardly had enough room for their increased business. Their new building is much larger. W. H. Bell, the coast manager, says that business has nearly doubled during the past year.

B. H. Pratt, Pacific coast manager of the Fisk Tire & Rubber Co., has returned from his recent visit to the factory.

J. Elwood Lee, president of the Lee Tire & Rubber Co., is making a tour of the west, and visiting the company's branches. He is now in San Francisco, having come up from a visit to Los Angeles, where he made his headquarters with the Chanslor-Lyon Company, distributors for the Lee tires.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

THE rubber manufacturers of this city and nearby towns intend to fight against the proposed cut in the tariff on rubber of from 35 to 10 per cent. The rubber manufacturers of this city and Lambertville decided at a meeting this month to make a formal protest against any reduction in the present rate.

The manufacturers who have combined to protest to Congress include John S. Broughton and J. Watson Linburg, of the United and Globe Rubber Manufacturing Co.; John A. Lambert, of the Acme Rubber Manufacturing Co.; George W. Pratt and B. H. Taylor, of the Lambertville Rubber Co.; J. Russell Kelso, of the Woven Steel Hose and Rubber Co.; Charles E. Stokes, Home Rubber Co.; William G. Grieb and L. P. Destribats, of Ajax-Grieb Rubber Co.; Clarence D. Wilson, Joseph Bartine and Bruce N. Bedford, of the Luzerne Rubber Co.; Alfred Whitehead, of the Whitehead Brothers Rubber Co.; Oscar F. Beck and Samuel H. Dodd, of the Vulcanite Rubber Co., of Morrisville; A. E. Sawyer, of Vulcan Tire Co.; C. H. Oakley, Essex Rubber Co., Inc.; C. Edward Murray and J. Boyd Cornell, Empire Rubber and Tire Co., and Crescent Belting and Packing Co.; W. J. B. Stokes, of the Thermoid Rubber Co.; William L. Blodgett and William H. Servis, of the Hamilton Rubber Co., and the Mercer Rubber Co., and the Joseph Stokes Rubber Co.

The manufacturers declare that the proposed reduction if put into effect, will virtually put out of business many branches of the manufacture of soft rubber. It is the opinion of the local manufacturers that the proposed cut is decidedly inimical to the interests of the manufacturers and employes. The duty on hard rubber is left considerably higher than that on soft rubber. John S. Broughton, of the United and Globe company, and C. H. Oakley, of the Essex company, will head a delegation which will visit the tariff makers at Washington.

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The makers of automobile tires say the proposed cut will bring havoc to the trade. It is claimed that English, French and German tire makers will have no difficulty in underselling the American manufacturers, as the tire makers here are paid from $22 to $28 per week, while in the foreign countries it is said the average wage of tire makers is not more than $10 per week at the outside, with other labor in proportion.

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Cornell G. Murray, son of General C. Edward Murray, treasurer of the Empire Rubber and Tire Co., and Crescent Belting and Packing Co., is to be married to Miss Anna G. Apgar, daughter of Counsellor W. Holt Apgar at an early date. Young Murray is manager of the sales department of the Empire Co.

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With a view of further increasing the present prosperous business abroad of the Home Rubber Co., Arthur R. Foley, of this city, has been promoted to the superintendency of the London branch. W. J. B. Stokes, head of the Home company, said the business of the company was increasing so steadily that it was decided to have Mr. Foley assume direct control. Mr. Foley sailed on the *Mauretania*, April 23, from New York. He has been identified with the rubber industry from boyhood.

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The Joseph Stokes Rubber Co. has contracted with builder, George E. Benson, for the erection of a one-story brick addition to the plant on Taylor street to cost $3,500. The new building is an addition to the power house.

New Rubber Goods in the Market.

A PUNCTURE PLUG AND A SELF-VULCANIZING PATCH.

WHEN the motorist skims by in his red touring car, going 30 miles an hour, he is naturally an object of envy. But when a few minutes later he is discovered with the machine pulled up at one side of the road, while he sits down in the dirt with various tools strewn around him making emergency repairs, envy turns to commiseration. If all the work, and bother, and fussing, and fretting of wayside accidents could be eliminated, how delightful automobiling would become.

But many active minds are busily engaged trying to make wayside repairing as easy as possible. Here for instance are a couple of articles, that many a motorist will recognize instantly as undisguised blessings. One is the Self-Vulcanizing Patch, a cut of which is herewith shown. It consists of a combination of raw gum inner surface with a "cured" outer covering. To use it merely moisten the face with gasoline and apply to the cleaned surface of the tube. Rub down firmly and the repair is finished. The heat of the moving tire is sufficient to make a properly vulcanized job of it, inside of a few minutes.

GOODRICH SELF-VULCANIZING PATCH.

Another boon to the motorist whose tire has taken a puncture—as tires inevitably will, as long as nails and other small, sharp-pointed objects are permitted to lie in the roadway—is a puncture plug that consists of a flat disc with a pointed stem coming from the center. Where the puncture is small, this stem can be pushed through the hole, when the little metal ball inside the stem automatically seals the puncture. No cement—no mess—no muss. Simple and quick, and said to be absolutely air tight. (The B. F. Goodrich Co., Akron, Ohio.)

WHAT A WOMAN DREADS MOST.

The newspaper humorists, who do so much to contribute to the gayety of life, invariably contend that what a woman most fears and dreads is a mouse. This, however, is not true. What a woman most fears, dreads and abhors is a wrinkle; and anything that will protect her from this arch enemy of her sex is bound perforce to receive an enthusiastic welcome.

Here is a contrivance, small, simple, neat and not expensive, that is designed to ward off as long as possible, the evil day of wrinkles. It is called the Daisy Massage Tapper. It requires no electricity or other extraneous power for its manipulation, as the patient is her own operator. It has a hard rubber handle, while the tapping feature consists of about 20 soft rubber vacuum cups, mounted on a metal back. Vacuum or suction massage is said to be recognized by the experts as an unrivalled beautifier, and the principle of this tapper is suction massage. The action of these vacuum cups is to stimulate the circulation, the theory being that stimulation brings the blood to the surface, feeds the tissues, builds up the flesh and renews the skin. This tapper can be applied wheresoever it is desired, but its chief field of operation naturally consists of face, neck and arms.

The manufacturers probably hardly contend that it would make a woman of 69 look like 19, but if it makes a woman of 50 look like 30, it will have adequately served its mission. [Imperial Brass Manufacturing Co., Chicago, Illinois.]

RUBBER EARS AND NOSES.

To be sure, one's own ears and nose are preferable to even the finest works of manufactured art. But if one has been caught in the rush of the Brooklyn Bridge, or has taken part in some peaceful political primary and has lost an ear or parted with a section of his nose, it is consoling to know that art can adequately supply the deficiency. Artificial ears and noses are made to take the place of the natural members which have been lost in part or *in toto*. They are made of rubber, which does so much in a thousand different ways to add to man's comfort and well-being. These artificial members are made of a vulcanized rubber, pliable in form and so natural in coloring that the difference cannot be detected. They are not, however, turned out in wholesale lots like shoes and tires; for if a man has lost an ear and wants a new one of rubber, naturally it must match the other. This means in every case an individual mold prepared with great care. The two cuts shown herewith are made from photographs of a rubber ear and a rubber nose made by Dr. W. B. De Garmo, 27 West 42nd street, New York.

A RUBBER NOSE.

AN EAR MADE OF RUBBER.

News of the American Rubber Trade.

A RUBBER COMPANY BECOMES A WATER COMPANY.

IT is not very often that a rubber manufacturing company goes into the business of municipal water supply, but that is what occurred during the recent Western Flood, when the Republic Rubber Co., of Youngstown, Ohio furnished the city with its entire water supply for a number of days. The city's own water supply was temporarily vitiated by the flood, while the water supply of the Republic Rubber Co., amounting to 6,000,000 gallons a day, was not affected. The company volunteered to give the city its supply of water, gratis, as long as it was necessary.

THE UNITED STATES RUBBER CO.'S ANNUAL MEETING.

The twenty-first annual meeting of the stockholders of the United States Rubber Co., will be held at the office of the company, in New Brunswick, New Jersey, on Tuesday, May 20, 1913, at 12 o'clock noon, for the election of directors, and for the transaction of any business that may come before the meeting, including the approval and ratification of all purchases, contracts, acts, proceedings, elections and appointments by the Board of Directors or the Executive Committee since the twentieth annual meeting of the stockholders on May 21, 1912, and of all matters referred to in the Twenty-first Anuual Report to stockholders, which will be sent to stockholders before the meeting.

The transfer books will not be closed, but the New Jersey Corporation Law will not allow to be voted any share of stock which shall have been transferred after April 30, 1913.

A FIERCE BLAZE.

A fire that was sudden, fierce and dramatic, though not attended, fortunately, by any loss of life, or by any great loss of property, occurred in Needham, Massachusetts, early in the morning of April 11, when Stowe & Woodward's Rubber Works plant was practically destroyed. The building, constructed of cement and wood, was about 150 feet long, and a story and a half high. Within five minutes of the breaking out of the fire the entire building was a mass of flames. The company manufactured a rubberized lining used for buggy and automobile covers. In its preparation considerable gasolene is used, and it is supposed that a vat of gasolene situated on the first floor exploded. What occasioned this explosion is not known. The first intimation that the workmen had of the trouble was a sudden burst of flame, which gave them barely time to rush through the doors and leap out of the windows. The workmen on the second floor saved their lives only by leaping from the windows. There were about one hundred employes in the building at the time. The financial loss did not exceed $20,000, covered by insurance.

The firm is running its Campello factory to full time, however, and filling orders as fast as possible under this serious handicap.

Regarding this fire, a curious coincidence is noted. At a large establishment, devoted to the manufacture of rubberized cloth, not over fifty miles from the one just mentioned, three incipient fires were started on the same day that the Stowe & Woodward factory was burned. These fires were also in the machine room, and were immediately under the rolls or calenders. An official of this larger concern states that in his opinion, there was something peculiar in the meteorological conditions of the atmosphere that day, and that the electricity in the air was sufficient to ignite the material passing between the rolls of the calenders.

THE UNITED STATES RUBBER RECLAIMING CO.'S NEW OFFICES.

The United States Rubber Reclaiming Co., Inc., has joined in the uptown movement and moved its offices to the handsome new Forty-Second Street building, 18 East Forty-second street, New York.

THE SEAMLESS TIRE.

An automobile tire which is creating quite a little comment in automobile circles is that known as the "Seamless," so named from its makers—The Seamless Rubber Co., of New Haven, Connecticut. This company has been identified with the rubber manufacturing industry since 1877. It has been well known in the manufacture of druggists' sundries, and for two years and a half, now, has been marketing the "Seamless" tire. We reproduce their trademark, which is printed in red and black and is distinctive and striking. The tire is made of all Sea Island fabric, and Pará rubber, and is built and vulcanized in a single unit by the "Seamless" one-cure, wrapped-tread process. The company has adopted the slogan, "Built up to a Standard, not down to a Price," which is strong as a motto and excellent as a declaration of policy.

THE J. P. DEVINE CO.'S NEW LOCATION.

The J. P. Devine Co., manufacturers of vacuum drying apparatus, Buffalo, New York, have moved their offices and also their factory to 1372 Clinton street in that city.

NEW ADDRESS OF THE R. J. CALDWELL CO.

The R. J. Caldwell Co., commission merchants, have recently moved their offices from 488 Broadway, New York, to 15 Park Row, on the corner of Broadway.

THE REVERE CO.'S GENEROUS GIFT.

Mention has been made before in these columns of the donation of a spacious playground by the Revere Rubber Co., to the city of Chelsea, Massachusetts, where the company has a large plant. The deeds to the playground were finally passed on March 28. Mr. W. M. H. Gleason, the company's treasurer, acted as the company's representative, while the mayor and treasurer of Chelsea accepted the gift in the name of the city.

THE FIRESTONE'S NEW SYRACUSE BRANCH.

E. A. Hoffman, formerly manager of the supply house of Wyckoff, Church & Partridge Co., has just been selected by the Firestone Tire and & Rubber Co., of New York, to open and operate its new Syracuse branch and service station at No. 502-504 East Genessee street. This is another advance on the part of the Firestone Co. in its general policy of establishing branches and service stations over the country. Mr. Hoffman has lived most of his life in Syracuse, where he has a host of friends. His experience dates back to the early bicycle days, having been at one time in business for himself in Syracuse operating as Hoffman & Weaver.

MR. BABCOX IS PROMOTED.

Once in a while a man does so well in some other field of advertising that he is promoted into the rubber field. Mr. Edward S. Babcox has just achieved this distinction. He was formerly advertising manager of the Yawman and Erbe Manufacturing Co., of Rochester, New York, and has now been made advertising manager of the Firestone Tire and Rubber Co., of Akron, Ohio. Mr. Babcox is not only an advertising writer and planner of acknowledged ability, but he can talk very entertainingly on this most abstruse science.

A RUBBER DISPLAY AT THE FLOWER SHOW.

The flower show held from April 5th to the 13th, at the Grand Central Palace, in New York City, was an unqualified success, and it deserved to be. There was one feature of particular interest to rubber men, and that was the exhibit of the Revere Rubber Co., which showed how a commercial display could be made to appear in perfect harmony with an exceptionally artistic environment. Generally speaking, the show was a vast bower of bloom and blossom; while the Revere Rubber Co.'s exhibit was an exploitation of garden hose, but so exploited that there was no sense of incongruity. On the contrary, the hose exhibit seemed a very natural feature of the flower show.

A PERGOLA MADE OF "REVERO" HOSE.

The exhibit consisted of a pergola about 12 feet wide and 10 or 12 feet deep, the posts and cross-pieces being wrapped in "Revero" hose, while between the posts stood rubber plants and around the cross-pieces twined southern smilax. Eight thousand feet of hose were used in the construction of this artistic booth. An additional feature standing just outside of the pergola was a large reel of hose, of polished oak, 6 feet in diameter, and large enough to accommodate 6,000 feet of hose. In the center of the reel, covered by glass, was a miniature garden scene, showing flower beds and shrubbery and a garage in the background, while in the foreground stood a miniature gardener spraying the flower beds with real water from a diminutive hose. This exhibit attracted a great deal of attention—notwithstanding the riot of floral beauty, including priceless roses and $25,000 orchids, that surrounded it.

A SIX FOOT REEL OF HOSE, CONTAINING A MINIATURE GARDEN.

NEW INCORPORATIONS.

Behrmann Shoe Co., Inc., April 21, 1913; under the laws of New York. Authorized capital, $10,000. Incorporators: Henry F. Behrmann, Caroline Menauch and Alme Behrmann—all of 31 New Chambers street, New York. Location of principal office, New York City. To deal in shoes, rubber and cloth goods, etc.

Boston Rubber Supply Co., April 5, 1913; under the laws of Massachusetts. Authorized capital, $5,000. Incorporators: Jacob Gordon, 11 Westminster road; Isaac Kabler, 28 Creston street, and Louis Goldstein, 47 Linden Park street—all of Roxbury, Massachusetts. To manufacture and deal in rubber specialties, etc.

Cottica Rubber & Coffee Corporation, March 27, 1913; under the laws of New York. Authorized capital, $250,000. Incorporators: George J. Ord, 851 West One Hundred and Eighty-first street, New York; Vincent G. Butler, 122 Market street, Newark, New Jersey, and Daniel L. O'Connor, Huguenot Park, Richmond, New York. Location of principal office, Buffalo, New York.

The Harper Tire & Rubber Co., March 3, 1913; under the laws of Ohio. Authorized capital, $100,000. Incorporators: Warren D. Harper, James Thomas and Albert H. Vayo. Location of principal office, Canton, Stark County, Ohio. To manufacture and deal in automobile tires and the doing of all things necessary or incident thereto.

The Ireland Rubber Co., Inc., March 26, 1913; under the laws of New York. Authorized capital, $25,000. Incorporators: Frederick William Humphreys, 142 West Eighty-third street, New York; Charles Summa, 189 Academy street, Newark, New Jersey, and Walter Ulrich, 1572 Broadway, New York. Location of principal office, New York City.

Newark Rubber Co., March 26, 1913; under the laws of Maine. Authorized capital, $100,000. Incorporators: John H. Stone, 31 State street, Boston, Massachusetts, William R. and Edward S. Antoine—both of 57 Exchange street, Portland, Maine. To manufacture and deal in all kinds of rubber goods.

Peerless Tire Co., Inc., March 25, 1913; under the laws of New York. Authorized capital, $15,000. Incorporators: Michael Schiavone, 1424 Sixty-eighth street; Antonio Caropreso, 1452 Seventy-first street, and Louis Schiavone, 1450 Seventy-first street—all of Brooklyn, New York. Location of principal office, New York. To deal in rubber tires.

Severin Tire & Rubber Co., February 27, 1913; under the laws of Oklahoma. Authorized capital, $10,000. Incorporators: A. L. and L. H. Severin, and J. R. Eagan—all of Oklahoma City, Oklahoma. Location of principal office, Oklahoma City, Oklahoma. To manufacture, buy and sell automobiles and automobile supplies and sundries, etc.

The Stetson Mfg. Co., Inc., April 2, 1913; under the laws of New York. Authorized capital, $25,000. Incorporators: Cora S. Butler, 2112 Euclid avenue, Cleveland, Ohio, Florence M. Hall, 128 Ascension street, Passaic, New Jersey, and William A. Shepard, 5 Beekman street, New York. Location of principal office, New York City. To manufacture devices made of rubber, etc.

Zip Co., Inc., April 12, 1913; under the laws of New York. Authorized capital, $5,000. Incorporators: A. Calvin Ross, 38 Adelaide street, E. Toronto, Ontario; Augustus G. Porter, 127 Buffalo avenue, and Frederick Chormann. 315 Jefferson avenue, both of Niagara Falls, New York. Location of principal office, Niagara Falls, New York. To manufacture compounds used in treating rubber, and to manufacture rubber goods.

TRADE NEWS NOTES.

The W. C. Hendrie Rubber Co., of Denver, which recently gave out a contract for a tire factory in Torrence, California, is at the same time doubling the size of its Denver plant.

The Buckeye Rubber Co., of Akron, Ohio, is making a $20,000 addition to its present buildings, and is also remodeling one of its old buildings in order to use it as a curing room.

The American Tire and Rubber Co., of Akron, Ohio, has recently opened a branch office in Milwaukee, Wis., with Albert Weisskopf as general sales manager.

The Fort Dearborn Rubber Goods Co., of Chicago, dealing in reliners, blow-out patches and outer boots, has recently increased its capital from $5,000 to $10,000.

The Squires & Byrne Rubber Co., of Los Angeles and San Francisco, was recently awarded the contract to furnish the California and Oregon Grain & Elevator Co., of Portland, Oregon, 2,250 feet of Quaker City Rubber Co.'s Grain Elevator Belt.

The B. F. Goodrich Co., Akron, Ohio, recently opened new quarters in the Glenwood-Inglewood Building, Minneapolis, Minnesota.

The National Rubber Co., of St. Louis, is marketing a tire-cut filling material called "Narco." It is said to be self-vulcanizing and becomes an integral part of the tire upon standing over night.

Announcement has been made of the opening in New York of a branch selling agency for the Etablissements Bergougnan of Clermont-Ferrand, France, makers of the Gaulois tires, and an initial shipment of 5,000 tires is said to have been already received at the Gaulois headquarters, Sixty-fourth street and Broadway.

The Alling Rubber Co., which has a chain, or more properly a group of rubber stores in various towns in New England and New York State, expects soon to open another at 92 Genesee street, Utica, New York, of which Mr. William Walls will be the manager.

The stockholders of the Patterson Rubber Co., of Lowell, incorporated last October, have voted to increase the capitalization of the company from $500,000 to $1,000,000 by the issue of 2,500 shares of preferred and 2,500 shares of common stock at $100 a share.

UNITED STATES COMMON PAYS SIX PER CENT.

The directors of the United States Rubber Co. on April 3 declared the usual quarterly dividend of 2 per cent. upon the first preferred stock of the company, and a quarterly dividend of 1½ per cent. upon the common stock. Over nine-tenths of the second preferred stock has been extinguished under the recent offer made by the company; on the small amount as yet outstanding 1½ per cent. will be paid. It was stated that, although all of the April 1 inventories had not been completed, sufficient was ascertained to show that the net earnings of the company for the year would be from $1,500,000 to $2,000,000 in excess of all dividends declared, including the increased dividend on the common stock.

WANT AMERICAN RUBBER COATS.

A report from an American consular officer in a Mediterranean country states that a firm of large dealers in rubber goods in his district desires to represent an American exporter of rubber coats for men and women (mackintoshes) of the less expensive and of the better qualities. Correspondence may be in English. The report is No. 10,627.

LABOR ORGANIZATION AT AKRON.

While there are now practically no reminders in Akron of the recent strike that lasted a number of weeks in that city, it is reported that the American Federation of Labor is striving to bring about a permanent local organization in that city and to make it the headquarters of the rubber workers of America, who are connected with that labor organization.

PERSONAL MENTIONS.

Charles M. White, Jr., of The Firestone Tire and Rubber Co. has recently located in Detroit as pneumatic tire representative to the Automobile Manufacturers of Michigan. Mr. White formerly represented that company in Syracuse and his new position comes as a well deserved promotion.

M. A. Magee, who for several years has been connected with the Motz Tire and Rubber Co., of Akron, Ohio, has succeeded P. M. Pontius as sales manager. Mr. Pontius is specializing in the work of the Electric Pleasure Car Tire and is now in the position of manager of that department.

George W. Taite, who was vice-president and manager of the Sawyer Belting Co. for about ten years, and who resigned some few months ago and became the moving spirit of the transfer of The National Belting Co.'s plant from Lawrence, Mass., to Elyria, Ohio, has resigned his office as president of The National Belting Co. and sold his holdings.

MR. KENDALL GOES TO AKRON.

Mr. J. A. Kendall, the Western representative of Tyson Bros., Inc., of Carteret, N. J., who has been representing the company in Cleveland, has taken an office at 524 Second National Bldg., Akron, in order to be able to take better care of the Akron trade.

A RUBBER MAN IN SOUTH AMERICA.

A delegation of American business men, principally New Englanders, sailed from Boston on April 24th, under the auspices of the Boston Chamber of Commerce, for a three months' tour of South America. They will go across the Isthmus of Panama, take a look at the Canal, and then coast down the west shore of South America, visiting Lima and other points in Peru, besides the principal cities of Bolivia and Chile, going as far South as Valparaiso; from there cross the continent to Buenos Aires, and go up the east coast, stopping at Montevideo, Rio and other points, and landing in New York, July 23. There were about sixty-five members in the party.

EDWARD T. SMITH.

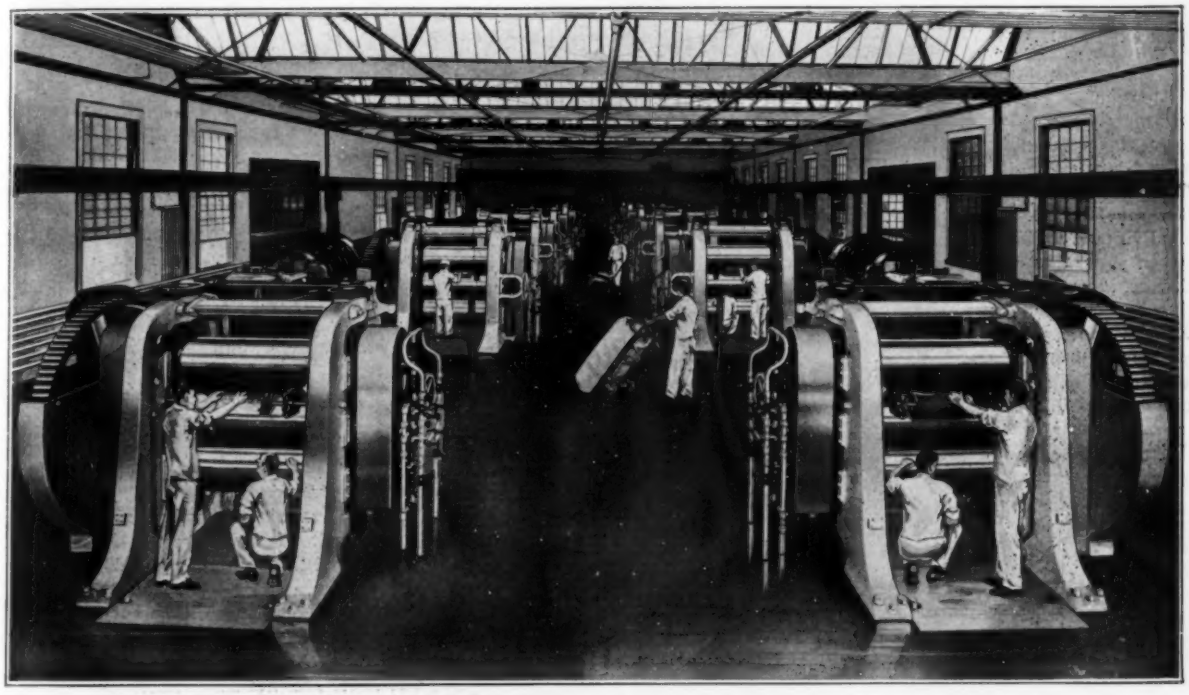
The only rubber man in the delegation is Edward T. Smith, of the Iroquois Rubber Co., of Buffalo, N. Y., who goes in the interest of the United States Rubber Co., to see what rubber goods are used on the Southern continent, what they look like, where they come from, and what prices are paid for them. In the present spirit of enterprise so evident all over South America, these tourists from the States will undoubtedly receive a warm welcome. Mr. Smith will doubtless learn a great deal of value to the company he represents.

A GREAT CALL FOR TIRES.

The statistician of the United States Tire Co., estimates that during the present year 5,000,000 pneumatic tires will be necessary for automobiles, and that in addition there are 50,000 motor trucks that will require tiring, and 250,000 motorcycles. Assuming that the motor trucks will require six tires each, that will make a total of 300,000 truck tires; and allowing only a pair of tires for the motorcycle, they would require a half million tires, bringing the total number of tires for the year in the vicinity of 6,000,000.

THE CALENDER ROOM OF THE REPUBLIC RUBBER CO.

The cut above shows the calender room of the Republic Rubber Co., of Youngstown, Ohio, as it appears in the new rolling mill of this plant. The company refers to this as "the biggest calender room in the world." The reproduction below shows that it is certainly a very large and well equipped calender department. It is here that the famous "Staggard" tread tires are made.



REPUBLIC RUBBER CO.'S NEW CALENDER ROOM.

OCCUPATIONAL DISEASES IN CHEMICAL TRADES.

A committee on occupational diseases in the chemical trades was recently appointed by the New York Section of the American Chemical Society. The objects of the committee may be specifically stated as follows:

1. To hold itself ready to advise the legislatures of the states of New York and New Jersey in reference to matters pertaining to occupational diseases in the chemical trades.

2. To study various bills presented in the legislatures in an effort to avoid unwise legislation; especially that which might be inoperative or ineffective from one or many reasons resulting from lack of technical knowledge at the time of writing the laws.

3. To inaugurate and superintend such investigations as might be decided upon which look toward improvement of conditions of labor in the chemical trades.

Dr. Charles Baskerville, Professor of Chemistry and Director of the Laboratory, College City of New York, is chairman of the committee.

TRUCK TIRE PRICES TO COME DOWN.

C. W. Martin, manager of the motor truck tire department of The Goodyear Tire & Rubber Co., Akron, Ohio, is authority for the statement that there will be another 10 per cent. reduction in truck tire prices. "This cut will take place immediately," he remarks, "and is the second cut which has occurred since the first of the year. This reduction is made possible not only by reason of our increased manufacturing facilities, but also by the recent drop in the price of crude rubber.

"Now that the truck has proved itself a prime factor in economic transportation, it seems safe to say that within four years the truck tire business of the country will exceed the automobile tire industry by far, for the truck represents the actual utilitarian reason for the existence of the motor driven vehicle."

TIRE MAKING IN THE SOUTH.

The citizens of Jacksonville, Florida, or at least some of them, are very enthusiastic on the subject of tire manufacture in that city. The Seminole Rubber Co has recently been formed and has purchased the site of a former tannery on the banks of the St. John's River. One of the Florida papers takes the following very optimistic view of the outlook:

"As 72 per cent. of a finished tire consists of long staple Sea Island cotton, this will be the only industry enjoying the many advantages of having the chief raw material right at its doors.

"Owing to the saving in freight rates on raw material and other advantages, a standard tire, with one extra layer of fabric and a real 5,000 mile guarantee, will be retailed at 10 per cent. below the present price. It is believed this will result in keeping a large part of the $20,000,000, that annually leaves the South for buying auto tires, for home circulation."

The consumption of tires in the South is of course very considerable and ought to increase rapidly, as motoring can be carried on in many parts of that section during the entire winter. There seems to be no reason why at least a certain percentage of the tires consumed in that section should not be constructed there.

THE FAULTLESS RUBBER CO. WINS ITS SUIT.

The United States Circuit Court of Appeals, for the Northern District of Ohio, recently rendered a decision favorable to the Faultless Rubber Co., in an interesting suit brought against the Star Rubber Co., of Akron, for infringement of its "Kantchoke Nipple," patent No. 926,011. The Faultless Rubber Co. owns patent No. 926,011, issued to it June 22, 1909, as the assignee of Thomas W. Miller. The subject matter of the suit was a nipple for nursing bottles. The specification stated as one of the objects "to prevent any contraction of the opening from the body portion into the mouthpiece of the nipple under compression of the same." The claim said to be infringed was claim 1, reading as follows:

"1. A nursing nipple, embodying a mouthpiece, a neck, and an intermediate body portion flaring from said neck to receive the bead of the bottle neck, the upper wall of said body portion projecting inwardly at an acute angle from its point of greatest width to form a substantially flat wall, the diameter of the opening from said body portion into the mouthpiece being relatively small in comparison with the diameter of said body portion."

In rendering its decision the court stated: "We agree with the Board (of Examiners) that the specification and drawings disclosed a novel combination giving a useful, new result, and entitled to protection by patent. One practical difficulty which Miller sought to avoid was the collapsing of nipples while in use. Evidently, a mere tube, when bent sharply to one side or when pushed inwardly so as to make a bend, would collapse and close. It is the patentee's theory that in the Ingram nipple (taken as the best type of previous nipples) the enlarged body portion is still so characteristically a tube that if the mouthpiece is pushed inwardly or bent to one side, either the opening into the mouthpiece or the two together will collapse; while, in the Miller device, this upper part of the enlarged body portion is so predominantly a diaphragm that it cannot break over, and instead, it yields longitudinally to a push or pull, and when the mouthpiece is turned sidewise, the diaphragm also turns. The arch of Ingram would resist against a sidewise bend of the mouthpiece, and the opening into the mouthpiece would collapse, but the diaphragm yields and the mouthpiece remains open. This result, as a new and useful result, seems probable enough on inspection of the patent and the earlier patents, and observation of samples, as far as they were submitted to us, confirms this idea. In any event, the utility of the new combination is probable enough, evidenced, as it is, by extensive public adoption., so that the defendant who has copies cannot be heard to deny such utility."

Accordingly, the court grants the usual interlocutory degree for injunction and accounting against the defendant company.

INFRINGEMENT SUIT DECIDED IN FAVOR OF THE FISK RUBBER CO.

In a recent important decision—which it would take two and one-half pages of this publication to reproduce—the United States Circuit Court of Appeals, for the First Circuit, affirms the decree of the District Court which held that the claims of United States Patent 822561 to P. D. Thropp were invalid by reason of anticipation.

Suit was brought against The Fisk Rubber Co. for infringement of this patent which, it was alleged, covered the form of mold used in the manufacture of Fisk tire casings by the one-cure wrapped-tread process.

This case has been before the courts for nearly four years, and the two decisions in favor of The Fisk Rubber Co. are of great interest to the tire makers of this country by whom the one-cure wrapped-tread process, and the apparatus involved in this suit, have been very extensively used.

TRADE NOTES.

William H. Scheel has announced that he has recently added to his already extensive line of compounding ingredients for the rubber trade, new dry colors of exceptional excellence and has already developed an active request for yellows, reds and greens noted for being impervious to heat. Mr. Scheel is also offering a zinc chromate chemically pure, both yellow and green, as well as a line of English brilliant vermilion, and English Vermilion substitute. These new colors will compare favorably with the general line which Mr. Scheel has been successfully offering to the American rubber trade for the past twenty years.

Ernest Jacoby & Co., whose headquarters are at 79 Milk street, Boston, were incorporated March 1, 1913, for $25,000 under Massachusetts laws. This concern is putting out a superior English substitute made by Englishmen in its South Boston factory. This house has an extensive connection throughout the rubber trade. Its New York representative is Mr. W. F. Schling, 150 Nassau street.

THE CRAWFORD SECTIONAL OVEN.

It is claimed by many that temperatures can be more accurately gauged in cases where steam is employed than where other mediums are used. Recent experiences made in the generation of heat from gases have tended somewhat to negative this view. The Crawford Sectional Oven, heated by an enclosed gas burner, is said to be a very high type of oven construction and an economical consumer of fuel. It is especially designed for close temperature control.

It is claimed to have been successfully used in the treating of certain composition products, and to have successfully vulcanized certain types of rubber goods. It is in extensive use among manufacturers of electrical goods for drawing the moisture out of fabrics prior to impregnation and heat, treating them in the finishing process. In the latter case it is perhaps needless to call attention to the fact that cotton carbonizes at a slightly higher point than that at which water boils (212 degs. Fahr.). Therefore successful impregnating compounds must be capable of heat treatment at no higher temperature.

The insulation of all these ovens is high and permanent. Their sectional arrangements permit of rapid erection in cramped quarters by unskilled labor and they are easily portable.

The Crawford Sectional Oven is made by the Oven Equipment & Manufacturing Co., of New Haven, Connecticut.

INDIA-RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta-percha for the month of January, 1913, and for the first seven months of five fiscal years, beginning July 1:

MONTHS.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
January, 1913	209,772	$128,082	$662,623	$1,000,477
July-December, 1912	1,373,297	845,341	4,033,073	6,251,711
Total, 1912-13..	$1,583,069	$973,423	$4,695,696	$7,252,188
Total, 1911-12..	1,297,422	1,076,492	3,987,743	6,361,657
Total, 1910-11..	1,215,134	1,600,041	3,397,718	6,212,893
Total, 1909-10..	1,096,459	1,371,199	2,739,953	5,207,611
Total, 1908-09..	803,067	958,671	2,088,523	3,850,262

The above heading "All Other Rubber," for the month of January, 1913, and for the first seven months of three fiscal years, beginning July 1, includes the following details relating to tires:

MONTHS.	For Automobiles.	All Other.	TOTAL.
January, 1913 .....*values*	$273,519	$389,105	$662,624
July-December, 1912	1,777,324	2,255,748	4,033,072
Total, 1912-13	$2,050,843	$2,644,853	$4,695,696
Total, 1911-12	1,374,337	291,460	1,665,797
Total, 1910-11	1,015,673	319,022	1,334,695

RUBBER IN THE RECENT FLOOD.

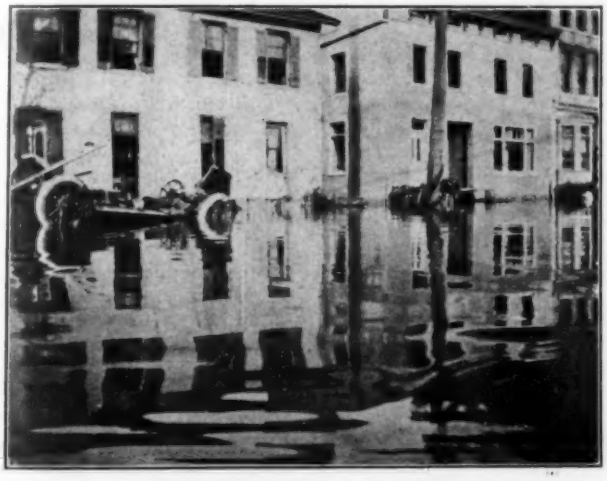
A FLOOD always means a loud call for rubber goods—obviously; rubber footwear and rubber clothing are in great demand. Some day when people are more provident than they are now, those who live in a territory where floods occur with any frequency, will have stored away in an odd corner, a folding raft with collapsible rubber floaters which they can get out on short notice and, by inflating the rubber floaters, put to good use, in saving life and valuables. But perhaps people have not yet quite reached that desirable degree of foresight.

One of THE INDIA RUBBER WORLD'S occasional correspondents lives in Ohio, close to the region where the recent flood did its worst, and he has sent in a few paragraphs, together with snapshots, showing the use that rubber boots, rubber coats and rubber tires were put to, during the ten days' inundation.

THE FLOOD AND THE TIRE TRADE.

"It's an ill-wind that blows nobody good," and the recent huge flood disaster in the mid-west has been the direct cause for the purchase of a vast number of tires.

To begin with, curiosity impelled almost every automobile owner in the vicinity of the flood belt within "motoring distance," that is—to speed away to see the flood. The roads were so bad, the streams so swollen, the concealed rocks so numerous, that many a tire was burst. Then, if one approached too near the flooded area, his automobile would be seized by the soldiers and impressed into relief work. Relief work is death to tires. It means speeding through streets where the asphalt has buckled beneath the waters, or it means going through water so high that your carburetor is all but flooded. It means riding over stock and stone and keeping on, on the flat tire when the inner tube has burst; for when lives are to be saved tires don't count.



AN AUTO IN THE HAMILTON FLOOD.

In addition, many an auto was caught in its garage by the tide, and knocked helter-skelter, out into the street; thence to be pummelled and driven about by the swift current till finally resurrected, much in the shape of the one in this snapshot taken at Hamilton.

RUBBER BOOTS IN THE FLOOD.

Many a man has been saved from catching a deadly cold through the use of rubber shoes or boots; but it is seldom that rubber footwear has assisted in the actual saving of so many lives as during the recent flood in Ohio. When the first horrors of that flood-night were over, the few who managed to escape from the torrent went out to the rescue of others. The work was done largely in boats, but often submerged out-houses, fallen walls, picket-fences and the like, kept these boats from making further progress. Then it became a matter of wading, and in ordinary foot-wear, with the waters freezing the feet, this would have been next to impossible, after two or three excursions into their depths. When relief work was finally organized, rubber boots were provided, and fitted in these the rescuers went about, carrying the sick and the exhausted to safety.

This photograph shows a rescue near the county court house at Dayton.

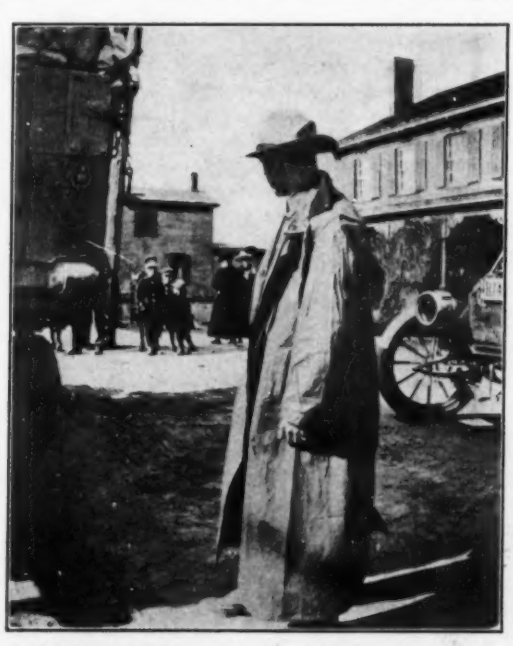
If there was any one item of dress more valued than any other by the soldiers of the Ohio National Guard detailed for

A FLOOD WORKER IN HIS RUBBER BOOTS.

RUBBER COATS IN THE FLOOD ZONE.

patrol duty in the flood districts along the Great Miami, it was the rubber coat.

Almost without ceasing, the rain poured, day after day, suc-



A NATIONAL GUARDSMAN IN HIS RUBBER COAT.

ceeding the actual torrents that caused the flood, and refugees, some of whom were on the house tops, beyond reach of rescuers, for full forty-eight hours, looked with no little envy on the more

fortunate national guardsmen, notably the men from Toledo, who walked about—even in the lightest drizzle—well protected in rubber coats. The floods had, of course, gutted the stores of the rubber dealers, and, where not, left everything beneath a coating of mud a foot deep, so that until relief came in from without, little could be obtained from local purveyors.

The photograph shows a major of the guard halting the autos and sightseers at the borders of Hamilton, until they secured the needful passes.

THE INCREASING DEMAND FOR RUBBER TOYS.

A PHASE of the kindergarten system which is making demands upon dealers in rubber toys, is the use of such object teachers to convey to infantile minds the forms of characters in fairy tales, as portrayed by book illustrators at home and abroad. As a teacher reads a fairy tale she places on the desk, one by one, a rubber doll designed to portray this or that fairy, gnome or elf, as for instance, the "Mad Hatter," the dormouse, and the Queen, and other characters in "Alice in Wonderland." When the tale is told, the teacher passes the rubber toys about the room for the children to play with while the impression of the story is active in their minds.

At first thought, it would seem as if this development of the idea of teaching by means of toys would not be of consequence in sales of rubber products, but the contrary is the case as THE INDIA RUBBER WORLD has learned in interviews with makers, distributors and retailers of toys. The reason is not far to seek: it is that there are at least three million children in domestic kindergarten schools, and that the parents of many of these children, buy at the urging of the children, such rubber dolls and other rubber toys as are used in the school for conveying certain ideas set forth in fairy and other tales.

A very large order was recently placed for rubber toys of these kinds by a large corporation of cut-rate druggists. The designs to which the manufacturers will conform in filling this order provide for following the drawings of famous child-life illustrators of England, France, Germany and our country. Many of the patterns will be in colors, but the most of the order calls for terra cotta finish.

All buyers for department stores, and for the larger retail druggists give it as their opinion, that the market for rubber toys is enlarging. In almost all instances, rubber toys as sold by these branches of trade are advertised in the press and bulletined by placards in the stores as unbreakable toys. This is a catchy term that goes far with those who buy gifts for children, and who know that for a number of years the guile of many makers of toys has been to make the products extremely fragile, for the purpose of giving the shortest possible life to the object, in order that the whimpering of the child over a soon broken toy may quickly lead to the purchase of a duplicate. It is becoming the practice both in drug stores and department stores to place a good assortment of rubber toys in the show cases that display rubber bath tubs, basins, spraying bottles, hot water bottles, and many other articles in rubber of especial design for use by mothers and nurses in the care of young children. In many hospitals where children are treated, and where a long time is occupied in giving special forms of baths, the nurses keep the children from fretting by placing rubber ducks, geese, swans and dogs in the tubs. This is a sound method of preventing the fretting in children which in adults is termed worrying.

NAVY DEPARTMENT WANTS RUBBER SUPPLIES.

The Bureau of Supplies and Accounts of the Navy Department, Washington, invites bids until May 6 for rubber boots, air hose, garden hose, rubber hose for flexible voice tubing, rubber pipe hose, suction rubber hose, upper-deck fire hose, wash deck hose, and rubber steam hose.

NEW TRADE PUBLICATIONS.

ELBERT HUBBARD DISCOURSES ON THE DEVINE VACUUM DRYER.

THAT seer, sage and most hilarious metaphysician, Elbert Hubbard, has penned a treatise entitled "The Age of Rubber—Being an Appreciation of the Vacuum Drying Apparatus Manufactured by J. P. Devine Co." The vacuum drying apparatus manufactured by the J. P. Devine Co., is interesting enough in itself, but when touched up by Elbert Hubbard, and set off by the spangles of wit, humor, history, logic and philosophy that characterize the literary style of the prophet of East Aurora, it becomes more than doubly interesting. This is the way he starts: "Three-fifths of the surface of the earth is covered with water. The world seems very much better adapted to raising fish than men, although man in his existence passes through an aqueous stage, and to a degree he never gets out of it." And then he goes on to describe, in his own way, the vacuum drying process as done by the Devine apparatus. If you are not familiar with this vacuum drying machinery, you should get one of these books and find out about it, and if you are familiar with the machinery but would like to know more about Mr. Hubbard's peculiar gift of writing, get the book on that account.

"THE STAGGARD."

The Republic Rubber Co., of Youngstown, Ohio, issued on April 1, Number 1, Volume I, of "The Staggard," a four-page illustrated publication, devoted primarily to the exploitation of the Staggard tire. It appears to be intended chiefly for circulation among the employes of the company, and of its branches and agencies, but it contains quite a little news of interest to the tire industry generally. This first number contains some interesting illustrations, among them a typical scene in the recent Ohio flood, which shows some Youngstown factory (not the Republic) so deep under water that the freight cars alongside are buried to their roofs.

IF YOU ARE GOING TO MOTOR IN EUROPE.

If you have any expectation of touring Europe this summer in your motor car, you should get a "Goodrich Auto Map and Guide to Continental Europe," just published by The B. F. Goodrich Co. The map when opened out is 20 x 24 inches, and covers England, France, Germany, Switzerland, and a very considerable part of Spain, Italy and Austria. It shows the principal thoroughfares in all that vast section. On the reverse side of the map there is a good deal of information of importance to the Continental tourist. It gives the various customs and other laws of each country, with the requirements for local registration, and much other information necessary for the motorist's welfare and comfort. It also reproduces the road signs generally in use in England and the Continent, so that the motorist can familiarize himself with them in advance.

In addition to the Continental Guide, the Goodrich Co. has just issued a number of other leaflets—one being a route book showing how to get from St. Louis to Kansas City without having to ask a question of anybody. Three other smaller leaflets are entitled "Goodrich Service," which is devoted to tennis balls; "Police," which treats of the Goodrich clincher tires, and "The Newest Chocolate Lines in Rubber," describing various syringes and pumps made of chocolate colored rubber.

A FOLDING RUBBER WASH BOWL.

One of the convenient little travelers' kits, provided for the comfort and physical well-being of the motorist, contains among other helps for cleanliness, a folding rubber wash bowl, which takes practically no room when not in use, and can be filled with a plentiful supply of water when it is needed.

The Editor's Book Table.

THE RUBBER TREE BOOK. BY W. F. DE BOIS MACLAREN. London, 1912. Maclaren & Sons, Limited. [Cloth, 308 pages, with 83 illustrations; price, 11*s.* 6*d.* post free.]

WHILE it may be considered by some that everything possible has been said about rubber, the rapid and continuous growth of the industry involves so many new considerations, that there is always room for a well considered and comprehensive work, such as that recently produced by Mr. Maclaren. His intimate connection with rubber, as director of various successful planting and financial companies, gives him special facilities for treating his subject. Having had a period of large and constantly increasing yields, with the result of big dividends, rubber companies have not up to now experienced the need of special efficiency in estate working. It is, however, being more and more recognized, that efficiency is no less essential to success in the rubber-growing industry, than in any other.

It has been the author's purpose to arouse the interest of the planter in the soil he cultivates and the trees he grows there, by showing how varied and wonderful are the phenomena connected therewith. In the words of the introduction, the object with which the book has been written has been to assist in obtaining better results than in the past, on more economical lines, and with a view to the future welfare of the rubber-growing industry.

Starting with the general consideration of "What a Tree Is," Mr. Maclaren takes up the question of the soil and its fertility, manuring, weeding and other subjects; leading up to the seed and its reproduction through roots, stem and foilage. At this point he quits the botanical division of the subject for that of cultivation, dealing successively with "Land Grants"; "Elevation"; "Roads, Bridges and Dams," "Felling and Burning," as well as various other points.

Next in order come the questions more directly affecting planting; including nurseries, planting-out and pruning.

Of special interest to estate owners, is the chapter on "Planting Distances." Mr. Maclaren arrives at the conclusion that a distance of 30 x 30 feet, or 48 trees to the acre, is not too wide. While it would involve at first a little sacrifice, later results would more than pay for waiting. An instance is recorded from Sumatra, in which three isolated trees eleven years old yielded in 1912 over 100 pounds each of rubber. Mr. Maclaren remarks that 48 such trees per acre would, on this basis, produce annually 4,800 pounds, while 400 pounds per acre is considered a very good yield from closely planted trees.

Proceeding to the subject of extraction, the questions of tapping and coagulation are next dealt with, both in principle and practice. Under the former head the various methods of incision are treated on the basis of trials made at experimental points, while the merits of different tapping knives and utensils are likewise discussed. In the treatment of the question, "The Latex and How It Is Coagulated," latex is considered as a reserve of plant food, representing only about 2 per cent. of the total volume of nutriment, and being intermingled with other elements of no service as food reserves. Mr. Maclaren disputes the correctness of Dr. Stevens' suggestion that the resins in trees must be stores of plant food also if latex is. The functions of latex are considered under various aspects, it being added that the co-operation of nature has a wider scope than many dream of.

When the coagulation of the latex has brought it out of the hands of nature into an industrial form, it becomes available for mechanical treatment. Under this head washing mills are considered from various points; including the width and speed of rollers and loss in weight. The process of creping is finally dealt with. This naturally leads up to the subject of the grading of rubber; the opinion being expressed that (instead of five as had been suggested) three grades should be quite sufficient for all purposes, namely, first latex rubber; second grade earth rubber. Drying, smoking and packing occupy the following chapters.

Most direct interest attaches to Mr. Maclaren's estimate of the cost of production, for arriving at which he thinks there should be a standard way. When any estate is producing 100,000 pounds of dry rubber a year, he considers the cost f. o. b. should not exceed 1*s.* 6*d.* (36 cents) per pound. He adds that such a figure ought to be looked upon as having to be reduced each successive year, till it is well under 1*s.* (24 cents) per pound.

Every page of this work contains some statement of interest; the whole volume reflecting high credit upon its author.

KALENDER FUR DIE GUMMI-INDUSTRIE. EDITED BY DR. KURT Gottlob. Berlin, 1912. Union Deutsche Verlagsgesellschaft. [8vo, 514 pages, cloth.]

The last annual issue of the Gummi-Kalender (to call it by its abbreviated title) is fully up to the mark of its predecessors. Its main divisions include a diary with blanks for memoranda of prices and names of manufacturers of supplies; details of the various organizations connected with the German and Austrian rubber industries; rubber washing and manufacturing tables. In its miscellaneous section there is a discussion of the risks of poisoning in the rubber industry.

In the supplement, the "Annual for the Rubber Industry," is a chronological calendar of the history of rubber from 1536 to the present time; followed by an article on the "Chemistry of Rubber," from the pen of the editor. Next in order come articles on "The Technology of Rubber," "Analysis of Rubber and Rubber Goods," "Practical Testing of the Qualities of Rubber Goods," "The Coloring of Rubber Goods," and "Viscosity of Rubber Solutions." The value of this work is materially enhanced by various groups of statistical tables.

Any one in a position to follow the intelligent arrangement of the Calendar and its supplement will find them of material value as a guide in technical operations and as a compendium of facts affecting the rubber industry.

GUMMI-ADRESSBUCH, 1913. (RUBBER DIRECTORY, 1913.) UNION Deutsche Verlagsgesselschaft. Berlin. [8vo, cloth, 578 pages.]

The 11th edition of this directory of the German rubber industry has lately appeared in its accustomed form, displaying a steady increase in the number of names. As it will be recalled by those familiar with the work, the cities of Germany are classified in alphabetical order; in each case the separate sections of the trade showing the names of the local houses in the different branches. The names in each city are thus concentrated, the handy little volume being therefore specially adapted for use by those personally visiting the centers of the German rubber industry.

A separate section is devoted to Austria-Hungary, filling 16 pages, arranged in the geographical order of the cities and towns referred to. A number of advertisements are interleaved or appear in the body of the text. Any one wishing to arrive at the details of the German manufacture and distribution of rubber and asbestos goods will appreciate this directory for its completeness.

RUBBER STOPPERS IN CHAIR LEGS.

A man out in California with an inventive turn of mind writes to "Popular Mechanics" that he has discovered a very inexpensive way of preventing chairs from marring the floors. He gets four rubber stoppers and then bores a hole the size of the stopper in the lower end of each chair leg, and inserts the stopper so that it projects slightly below the wood. This is something that anybody with an auger the proper size can do for himself.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE reports of the Akers Committee, though of primary interest to Brazilian politicians and people, have been followed with considerable interest by manufacturers in Europe. Popular though Eastern plantation Pará has become for very many purposes, there still remain many purposes for which the Brazilian product is considered indispensable, and it would seem inevitable that it must command a considerably higher premium in the market in the near future than is at present the case. A prominent manufacturer in conversation with me recently, confidently predicted the price of 2s. per lb. for plantation Pará in the not distant future, and expressed the opinion that in order to compete, the Brazilian merchants will have to pay their gatherers at a higher rate and considerably reduce the present remuneration of officials, capitalists and other go-betweens. Of course one must take into account the prospective advantages to be derived from the Madeira-Mamoré railway, a railway which is now familiar to British investors—or perhaps I ought to say underwriters—owing to recent financial developments on this side.

THE FUTURE OF BRAZILIAN PARA.

A point in the report which I have seen criticized in various papers is the proposal to start rubber works in Brazil with Government assistance. Quite apart from any considerations as to the suitability of the climate, there is no doubt that European rubber manufacturers look with apprehension upon the probable loss of some profitable export business. It is probably correct to say that as regards value mechanical rubber goods, largely for railway use, are the most important of our rubber exports to South America, these being followed by waterproof garments and tires. How the position stands with Continental countries or the United States I have no information, but our manufacturers are certainly not enamored of the idea of rubber manufacturing in the South American countries, though they extract a few crumbs of comfort from the assertion that the competition will take several years to make itself seriously felt. The first factory, I understand, is being put up at Bahia; machinery being already despatched from England.

IN the Russian supplement to the "Times," published on March 28, appeared an interesting contribution by V. P. Krymoff on the manufacture of rubber goods in Russia. Owing to the system of protection, coupled with the possession of two very large factories, the imports of rubber goods into Russia are described as insignificant, while the exports have shown a large increase. The daily output of goloshes at the "Prowodnik" works now amounts to the huge total of 42,000 pairs. Solid cab tires are made and used in Russia in numbers far exceeding all other countries. On the other hand the automobile tire trade has not yet achieved any great proportions, though rapid progress is being made at the present time. It appears that compared with some of the American states, the proportion of motor vehicles in Russia is only 1 to 100 other vehicles. Rubber sponges are stated by the writer to be virtually a monopoly, which, whatever may have been the case twenty years ago, seems rather surprising, now that the manufacture is carried on in several other countries.

THE INDUSTRY IN RUSSIA.

The writer does not refer to Russian reclaimed rubber, the export of which in large quantities to England is a very sore point indeed with English reclaimers. It is, of course, generally known that there is an export duty on Russian goloshes going to England and America. This is sufficiently high to bar their use in England as raw material for reclaiming, and as there is no export duty on Russian reclaimed rubber to England this is proving a serious competitor to reclaimed stock of similar quality made in England. Indeed the situation is such that I hear rumors of an important English reclaiming works proposing to erect a branch factory in Russia. Outside reclaimed rubber I don't know that the imports of Russian rubbers into England occasion home manufacturers any disquietude. As far as footwear is concerned the competition seems to be practically limited to America. Perhaps the Russian goods cannot compete with the American in price; certainly, as far as old goloshes for reclaiming are concerned, the quality of the rubber is superior to that of the American. With regard to Russian goods in England I ought to add that quite recently motor tires have been coming over in quantity and of a quality to make their competition felt by home manufacturers.

EARLY in the morning of March 12, the works of the Mersey Rubber Reclaiming Co., Ltd., of Stockport were entirely gutted by fire, and the business of the company has for the present been brought to an abrupt stop. The works in the main consisted of a four-story mill, formerly used in the textile industry. The fire appears to have started on the top floor, where the drying screens were situated, though the actual cause remains a mystery, nothing wrong having been noticed by the night watchman who had quite recently visited the rooms. The loss to plant and rubber, of which there was a large stock, may be put at about £12,000; electrical driving gear having only quite recently been installed. This loss is fully covered, I understand, by insurance, and so also is the mill. The Mersey company was established about two and one-half years ago, and as they were well booked up with orders for several months ahead, the fire is a most unfortunate occurrence. At the moment I cannot say definitely what will be done in the future, but I understand that recommencing the business on another site is a matter now under the consideration of the directors.

DISASTROUS FIRE.

LIKE the matter of the new King who is to preside over the destinies of Albania, there is considerable discussion and uncertainty about the personality of the new chairman of the above association. Colonel Birley has now held office for nearly two years, the ordinary term of one year having been extended by general request. If what I hear is correct, some difficulty is being found in deciding upon his successor, not from any rush of applicants, but because those approached have begged to be excused. Compared with what is known—at any rate in this country—as the American Rubber Trust, our manufacturers' association has always suffered from the fact that important works like the Silvertown, North British, Dunlop and Warner, have remained outside its membership though without in any way acting antagonistically towards it. The salesmen in America, I understand, have a definite price and stick to it, while here, despite the issue of notices as to this or that advance in price by the association, individual members have confessed to an uneasy feeling that their competitors do not always quite play the game. This is a delicate matter to which I only refer in a spirit of detachment, as being quite outside my personal ken. It is, of course, well known that the proceedings of the association are not communicated to the press, a matter which has in the past been adversely commented on by our London contemporary. With regard to the conduct of affairs I may say that general meetings of the members are only called at irregular intervals, the main business being attended to by a standing committee of half a dozen and a secretary.

THE INDIA RUBBER MANUFACTURERS' ASSOCIATION.

THE 1913 revised druggist sundries list has just been issued

(end of March) from the London premises, 117 to 123 Golden Lane, London, E. C., and the type and illustrations are of their usual excellence. The general trend of the alterations in price is downward, an important reduction being in the case of the De Vilbies range of atomizers.

THE B. F. GOODRICH CO., LIMITED.

A new pencil-mark eraser, to take the place of the well-known rubber brand, is now on sale at our stationers' shops, coming, I understand, from Germany. Whether this has anything to do with the recent fall in price of rubber, I do not know, but at any rate, I have met people who say they prefer the new substance to rubber. A block of the following approximate dimensions sells for one penny: 2 in. x ¾ in. x ½ in. thick. It is evidently made of some solidified oil with mineral matter of a soft texture, which does not remove the gloss on the paper.

NEW ERASER.

THIS company whose works are at Ordsall Lane, Manchester, have recently completed the extensions to their balata belting plant, and are now busily engaged in extensions to their mechanical rubber department. Owing to contiguity to house property, and the difficulty of getting more ground space, some of his passages, where a knowledge of rubber machinery on the American girder and concrete principle. This work when completed will afford room which is very necessary for the expansion in the mechanical rubber business to which branch the company largely confines itself.

THE IRWELL AND EASTERN RUBBER CO., LIMITED.

"CELLULOID, Its Manufacture, Application and Substitutes," is the title of a new and important work by Masselon Roberts and Cillard. It has been translated from the French by H. H. Hodgson, and published by Griffin & Co., London, at 25s. net. As the first book, I believe, published in English on the celluloid industry, and at any rate, the most modern and comprehensive, I may perhaps be allowed a few lines in this correspondence to congratulate the authors on having achieved a somewhat difficult task. and it would not surprise me if he met with criticism in of course, familiar to many rubber men by reason of its connection with our Parisian contemporary "Le Caoutchouc et la Gutta Percha," in which paper considerable attention has all along been paid to the celluloid industry. In drawing attention to the paucity of literature on the subject the authors make no reference to the important work of E. C. Worden, of Milburn, New Jersey, published in 1911; which, dealing with the nitro-cellulose industry, devotes 205 pages to celluloid alone.

CELLULOID.

Celluloid is an intimate mixture of nitro-cellulose and camphor, and in the earlier chapters of the book nitro-cellulose, the rationale of its nitration and the various commercial nitration processes, are fully treated, with a wealth of mathematics, which will probably prove disconcerting to many readers. Those, however, who are in a position to understand the mathematics will recognize their importance, and will not enroll themselves among those who may be inclined to think them out of place in a volume of this sort. The celluloid industry has attained considerably more prominence in France and Germany than is the case with England and America, for which, and for other reasons, the book is almost entirely concerned with continental practice. The British Xylonite Co., for instance, finds no mention, though there are some references to American procedure.

Rubber men who are unfamiliar with the celluloid industry will be interested to notice so much similarity in plant, the rolling mill for instance in which the cellulose nitrate, steeped in the alcoholic solution of camphor, and mixed with various mineral or organic colors, is worked into uniform sheets, seems to differ in no essential from the rubber mixing mill. The block press again is very similar to that used in the fine cut sheet industry. The waste celluloid, i. e., cuttings from goods, corresponds to unvulcanized rubber waste and can be used again in large proportions. There is nothing corresponding to vulcanized scrap in the industry. The analysis of celluloid is stated to be very difficult, another point of similarity with rubber. Not unnaturally, under the circumstances of the authorship, reference is made to the advantages offered by the Dynamometer P. B. and the elasto-durometer, for making mechanical tests on celluloid. I must confess that I have never worn a celluloid collar, but goods of their class, made from what is commonly called American linen, seem to be largely manufactured in France and Germany in the celluloid works. The inflammability of celluloid naturally comes up for mention in the book, but as I do not feel inclined to discuss this important matter in a line or two, I leave it alone.

The book concludes with a limited notice of the proposed substitutes for celluloid, few of which the authors say have any real industrial value. The best future, they say, appears reserved for the acetates—which, by the way, are now being used in the "non-flam" film manufacture. Altogether the authors must be congratulated, in my opinion, in having produced a much needed and well written work. The translator has had by no means an easy task with a very great measure of success. The name Cillard is, some one-story buildings are being converted into three-story would have come to his aid in making rough places smooth.

BIG PROFITS IN WATERPROOF GOODS.

At the twenty-fourth annual meeting of J. Mandleberg & Co., recently held at Manchester, a dividend of 15 per cent. was declared. During the last fourteen years there had been an average distribution of 20 per cent. per annum; their investments having thus been returned almost three times to the original shareholders.

STATISTICS OF RUBBER CONSUMPTION.

The fluctuations of rubber consumption during recent years as quoted by Messrs. Hecht, Levis & Kahn are as follows:

	Quantity.	Increase.	Decrease.
	Tons.	*Tons.*	*Tons.*
1905/6	62,574	.....	.....
1906/7	68,173	5,599	.....
1907/8	62,376	.....	5,797
1908/9	71,089	8,713	.....
1909/10	76,026	4,937	.....
1910/11	74,082	.....	1,944
1911/12	99,564	25,482	.....

The remarkable increase of consumption in the last year reported upon, is the most interesting feature of this table.

REGISTRATION OF THE HANOVER RUBBER COMPANY.

The Hanover Rubber Manufacturing Co. has been registered in that city. Its object is the manufacture and sale of rubber goods. The capital equals $5,000.

THE BERLIN-FRANKFURT RUBBER WORKS.

The Berlin-Frankfurt Rubber Works report a satisfactory year for 1912. Advantageous purchases of crude rubber led to this result, which allows the payment of a 9 per cent. dividend.

NEW AUSTRIAN RUBBER FACTORY.

The "Fama" Rubber Manufacturing Co. has been registered at Vienna with a capital equalling $12,600. Its address is Rennweg 64.

EASTER EGGS OF RUBBER.

Easter eggs of rubber are reported to have been again in favor during the recent Easter season. They consist of an oval ball of rubber, containing a number of rubber toys. This new adaptation of rubber is being watched with interest by manufacturers of rubber toys in Germany.

RUBBER FLUCTUATIONS.

The Credit Colonial and Commercial, of Antwerp, the company which is continuing the business of the old firm of L. & W. Van de Velde, has issued a valuable chart, showing the fluctuations in rubber prices since 1893. Several comprehensive statistical tables deal, moreover, with the world's production and consumption during that period.

Gustav F. Hübener, of Hamburg, has published a large chart showing in graphic form the fluctuations in rubber prices since 1902, with a table going back to 1883; thus indicating thirty years' results.

PROPOSED GERMAN COLONIAL UNIVERSITY.

Since 1908 Germany has had a "Colonial Institute" at Hamburg in which a certain number of young officials in the Colonial Administration have received instruction in the languages, ethnology, zoology and botany of the varous colonies for which they are destined. It is now proposed to establish a regular colonial university at Hamburg, which will regard all outlying nations and civilizations as separate entities of the human race. This university will have chairs in colonial history, languages and sciences, and will work in harmony with the Colonial Institute.

CAPITAL IN STOCKS OF RUBBER.

German rubber manufacturers are said to have a large amount of capital invested in stocks of crude rubber. In the case of one leading concern, their stock of rubber in the crude state and in process is said to represent upwards of $400,000. Few other branches have to carry such large amounts of valuable raw material. This fact is quoted as illustrating the financial importance of the rubber industry.

STATISTICS OF JAPANESE TRADE.

NOW that the effects of the new Japanese tariff are being fully experienced, the statistics of Japanese imports for January, 1913, are of special interest, as compared with the returns for the three months ending January, 1912:

	Month of January, 1913.	Three months to January 31, 1912.
Dental rubber	$2,770	$432
Soft rubber—Rods and buds	4,779	6,978
do Plates and sheets	2,110	3,905
do Tubes	4,182	4,223
do Belts and belting (machinery)	2,800	904
do Thread	790	4,074
do Erasers	1,270	1,734
do Supplies	917	51
do Other goods	5,212	3,822
Other—Lumps, bars, rods, plates and sheets	4,882	1,174
Other forms	8,856	3,266
Cycle tires	28,669	26,647
Insulated wire (other than submarine, telegraph and telephone)	178,120	60,288
Cords (other than flexible)	8,393	34,310
Rubber boots	1,964	72
Overshoes	902	1,310
Waterproof tissues	1,522	2,394
Elastic webbings, etc.	2,968	2,193
Insulating tape	3,275	3,341
Totals	$264,381	$161,118

Bearing in mind that the figures referring to 1912 are for the three months ending January 31, which those of 1913 are for the month of January alone, it will be seen that a marked advance is taking place in Japanese importations. In soft rubber tubes the imports for the month of January are alone about equal to those for the three months ending January, 1912. The total for January, 1913, in the 19 divisions quoted is $264,381 as compared with $161,118 for the three months ending January, 1912.

Taking one-third of the last-named amount as representing the amount for the month of January, 1912, the result is about $54,000 or one-fifth of the amount shown for January, 1913. The purchases made in anticipation of the tariff of 1911 have evidently been used up, and the Japanese import trade is returning to a position of normal activity.

Japan is making progress in the export of insulated electric wires. The figures of January, 1913, equalled $5,060, against $3,166 for the three months ending January, 1912.

NOTES FROM BRITISH GUIANA.

(By Our Regular Correspondent.)

WEATHER conditions are still conducive to the successful prosecution of the balata industry. Scarcely a day passes but that there is a fairly heavy rainfall, and there are abundant indications that the long rainy season is upon us. The result is reflected in the exports, which for the first three months of the year are 198,888 lbs., against 23,810 lbs., for the same period last year, when industry generally was in a paralyzed condition owing to the parching of the earth by the drought.

The annual session of the legislature has now closed. The financial chamber has sat in Committee of Ways and Means and fixed the taxes for 1913-14. It will be some relief to those interested in the balata industry to learn that there has not been a whisper as to the revival of the export tax on balata. It will be recollected that when last year this export tax was taken off in response to a fairly whole-hearted protest, some members of the combined court held out the threat that the abolition of the tax must only be regarded as a temporary measure, that sooner or later the industry must be compelled to contribute more largely to the revenue. Since then the report of the Balata Committee has been issued, in which it was clearly demonstrated that the government is in reality heavily in debt to the balata industry. That probably has in itself been sufficient to scotch any proposal as to reviving the tax. In addition, the industry is certainly not in such a position that it can afford to pay any further imposts. On the contrary, it requires the most careful attention of the government, which it has not received at this session. The promised bill is still apparently in course of preparation. In the meantime the fact that the combined court has cheerfully consented to meet the deficit that is expected to accrue at the end of the financial year by drawing on the surplus fund, would appear to indicate that the balata industry need not fear any new raid from the tax-gatherer for some time to come.

The annual report of the Director of Science and Agriculture for 1911-12 has just been issued. Professor J. B. Harrison says, in the course of a comprehensive review of the condition of agricultural industry in the colony, that the rubber industry continues to expand. A total of 2,259 acres is now under rubber, of which 1,800 acres are estimated to be under Pará rubber. Prof. Harrison says, "Tapping has been continued on two estates and has been started during the year on another. The quality of the rubber has been good, and the yields are reported to be satisfactory. The growth of Pará rubber trees continues to be satisfactory when they are planted in suitable situations. It has been free from any serious pests or diseases during the year, and Pará rubber does not appear to have been very adversely affected by severe drought. The rate of growth was considerably reduced during the drought, but the plants remained in a vigorous condition, except in wind-swept situations in the coastal regions."

The speech of the new governor at the session of the legisla-

ture, recently closed, was listened to with interest, but it contained little of importance to the balata industry. Referring to this subject he spoke as follows:

"I have inspected several estates and small plantations of this product, but nowhere have I found the necessary care and attention being given to the planted area. This is a great disappointment to me for the few trees I have seen properly attended to prove, as might be expected, that this tree grows here as freely and satisfactorily as in the Eastern Hemisphere."

INTERESTING CORRESPONDENCE ON THE SUBJECT OF THE IMPORTATION OF PARA SEEDS.

Professor J. B. Harrison, Director of Science and Agriculture, sent the following letter to the Government Secretary on January 28: "Sir: With reference to my letter of the 3rd April, 1912, covering an indent on the government of the Straits Settlements for the supply of 150,000 Pará rubber seeds and your reply thereto, of the 10th April, 1912, I now have the honor to report that the germination results have not been quite as satisfactory as in former years. The records are as follows:

Dates of receipt, 1912.	No. of seeds received.	No. of seeds germinated.	Percentage of germination.
October 24	7,844	4,276	54.5
November 7	20,676	12,960	62.7
November 21	63,659	48,170	75.7
December 2	7,935	5,799	74.6
December 5	51,813	24,451	47.2
Total	151,927	95,656	62.9

"The seeds received on December 2 were part of the shipment, the bulk of which came to hand on November 21. These seeds were left by the postal authorities at Trinidad, and thence were eleven days longer than necessary in transit. In every case the packing was all that could be desired, hence the lower average rate of germination appears to have been due to defects latent in the seeds when packed. These defects may have been caused by the prolonged droughts which affected many parts of the tropics in 1911 and 1912."

The Assistant Government Secretary sent the following letter to the Colonial Secretary of the Straits Settlements: "I am directed by the Governor to transmit herewith, copy of a letter from the Director of Science and Agriculture with regard to the Pará rubber seeds imported from the Royal Botanic Gardens, Singapore, and to say that this government is fully satisfied with the results, which show that these seeds can, by the method adopted by the Straits Settlements Botanic Department, be cheaply sent to the most distant places and yet give excellent germination results."

The annual report of the Institute of Mines and Forests, which has just been published, raises many points of the greatest interest to those engaged in the balata industry. One matter that occasioned some difficulty was a point raised by the Secretary, as to whether it is the duty of the institute to take out warrants and arrest laborers, without using any discretion and merely at the request of any employer; if so, in case of failing to prove the charge, and an action for damages is brought, is the institute liable in any way? Mr. Payne held on this point, of so much importance to employers, that as the institute acts as the agent of the employer and engages employes out of monies placed at its disposal by employers, it is its duty to proceed against the breaker of the contract in the absence of some exceptionally complete and satisfactory explanation. When the services have been embarked upon, however, the employe is also entitled to claim the assistance and protection of the institute, and the institute is entitled to and should use discretion, and liability to an action subsequently would depend upon the circumstances of each case.

The Secretary of the Institute wrote to the Government Secretary with regard to an ordinance under which nothing excused a laborer for leaving his employment, not even sickness or the absence of work, objecting to its injustice. Large gangs of men had been sent to work on places improperly prospected, where there was not sufficient work for half the number of men sent. Laborers coming to town under these circumstances before the expiration of the contract were liable to imprisonment, although in some cases they had been at the grant six months without earning sufficient to repay advances.

A letter was also sent to the government regarding better means of communication with the upper reaches of the Essequibo, a vital matter for the balata industry, suggesting an overhead ropeway from a point below Waraputa Falls, to which launches run in all seasons, to a point above King William Falls. The power to work this, it was suggested, could be obtained from the various falls met with *en route*. It was estimated that the journey would then occupy 12 hours instead of 12 days as at present. The government replied asking to be "furnished with some information as regards the probable amount of traffic to be dealt with at present and in future" and also with respect to "the number of persons who would be benefited by such a scheme." Nothing appears to have been done in the matter, since no concrete proposal has been put forward.

With regard to the labor question, the report states "It is regretfully to be put on record that the labor troubles, which were acute during the period on which we last reported, have not by any means subsided to normal conditions. When a system of advances to laborers is practised, there will always be found absconding, and other irritating and annoying circumstances. The mutual confidence that existed between capital and labor in the past has not been fully restored. There is every reason to believe however, that labor difficulties will be gradually overcome, and that we shall soon see a change for the better in the relation existing between employers and employes." The institute statistics show that the percentage of absconders contracted through the institute, as indicated by the warrants issued, was 3.66 per cent. of the number employed in the balata industry, as against 1.94 per cent. in the mining industry, and 1.37 per cent. in other industries.

THE BATAVIA RUBBER EXHIBITION OF 1914.

The program just received of the 1914 International Rubber Exhibition and Congress, at Batavia, show the latest arrangements prospectively made. Opening September 8 and closing October 10, the exhibition in this term of nearly five weeks will give ample time for the study of the display, while its technical interest will be largely concentrated in the Congress, lasting from September 7 to September 12; particulars of which appeared in the April issue of this journal.

The exhibition will be divided into thirteen sections, where the various exhibits will be properly grouped so as to show the botany, cultivation, preparation and packing of rubber, in fact, all its phases from the time it leaves the tree until it is ready for market. The subsequent stages of washing, vulcanizing and manufacturing are dealt with in a special section, confined to manufactures; with a view of both the crude rubber and the finished product being shown.

Other special sections include wild rubber and substitutes, gutta-percha and balata. The literature of rubber, its commerce and statistics are likewise under their respective heads. Applications for space should reach the General Secretary, Koningsplein, Batavia, Java, by November 1, 1913.

While the exhibition will undoubtedly do much by its international features, to attract those specially interested in crude rubber, it will at the same time afford the American manufacturer an opportunity of reaching with his products the teeming populations of the Far East. Java has a population of nearly 30 millions and Sumatra three millions. Numerous visitors may be looked for from other parts of the East, who would be possible, if not actual, buyers of rubber goods.

Some Rubber Planting Notes.

THE GROWTH OF MALAYAN RUBBER SHIPMENTS.

STATISTICS for the first three months of the present year as compared with 1912 and 1911, show a steady increase in the rubber exports of the Federated Malay States. The figures are:

	1911.	1912.	1913.
January	1,329,170	2,730,576	4,787,280
February	1,490,849	2,715,767	3,936,529
March	1,916,219	3,089,583	3,890,880
Total pounds	4,736,238	8,535,926	12,614,689

It will be remarked, however, that the returns for February and March, 1913, show a retrogression from that of January.

A supplementary return from the Colonial Secretary, Singapore, shows exports from the Straits settlements ports during March, 1913, as 2,008,533 lbs., as compared with 1,584,267 lbs. in February. These figures, in addition to rubber from the colony, include trans-shipments, but do not include rubber exported from the Federated Malay States.

LONDON ASIATIC RUBBER AND PRODUCE COMPANY (FEDERATED MALAY STATES).

According to the report for 1912, the crop was 706,945 pounds, as compared with 352,688 pounds in 1911. The gross price obtained was 4s. 3.17d. per pound, against a cost of 1s. 10.52d. Estimate for this year's crop is 947,000 pounds. Total area planted is 6,749 acres. A dividend of 50 per cent. has been declared.

RUBBER ESTATES OF JOHORE.

The report for 1912 presented to the seventh annual meeting of this company shows a crop of 106,261 pounds, against an estimate of 90,000 pounds. For the current year the estimate is 230,000 pounds. Cost, including selling charges, was 2s. 9.84d. per pound, and price realized was 4s. 3.18 d. per pound. The total area planted is 14,942 acres; the dividend paid being 5 per cent.

ANGLO-MALAY RUBBER CO.

According to the report for the year 1912, the total crop for the year was 943,491 pounds, against 780,972 pounds in 1911. Cost of production f. o. b. was 1s. 8.78d. per pound, against 1s. 8.52d. in 1911. The gross price realized was 4s. 3.36d. per pound; and the total cultivated area is 4,318 acres. A dividend of 60 per cent. was declared for the year 1912. For the current year the crop estimate is 1,150,000 pounds.

THE VISIBLE SUPPLY OF RUBBER.

At the annual meeting of the Golden Hope Rubber Estates, Mr. James Lloyd Anstruther, chairman of the company, quoted the total visible supply of rubber on April 1 as having been: 1911, 12,738 tons; 1912, 10,698 tons, and 1913, 12,978 tons. London deliveries of plantation rubber for the month of March had been in excess of the receipts; the respective quantities being 2,614 and 2,443 tons.

SELABA RUBBER ESTATES (FEDERATED MALAY STATES).

The crop for 1912 was 319,595 pounds, which realized 4s. 4.64d. per pound, against a cost of 1s. 10.53d. per pound. A saving of 5d. per pound had been effected as compared with last year in the cost of production. A dividend of 28 per cent. has been announced.

BIKAM RUBBER ESTATE (FEDERATED MALAY STATES).

The crop for 1912 amounted to 153,295 pounds, which realized 4s. 5.89d., as compared with a cost of 2s. 7.36d. per pound; the planted area being 993 acres. A dividend of 18 per cent. has been declared for the year.

LUNUVA (CEYLON) TEA AND RUBBER ESTATES.

The report for the year 1912 shows a crop of 14,301 pounds, costing 1s. 0.82d. per pound, which realized 4s. 0.07d. per pound.

SOUTH AFRICAN CRUDE ASBESTOS.

According to an official statistical return, the South African exports of crude asbestos for four years are as follows:

	Total.	Proportion shipped to Germany.
1908	$111,140	$50,550
1909	138,755	67,525
1910	140,650	65,655
1911	139,890	65,370

United States importations for the four years represented:

1908	$1,115,800	1910	$1,122,085
1909	1,021,390	1911	1,318,539

The American importations were almost entirely from Canada, while Germany and Russia furnished in 1911 manufactured asbestos to the amounts, respectively, of $12,616 and $10,928.

GOLD COAST AGRICULTURAL DEPARTMENT.

In amplification of the annual report for 1911 reviewed in the February number of the INDIA RUBBER WORLD, the Agricultural Department of the Gold Coast Colony has issued a short history of its institution and development. Since 1890 the number of its agricultural stations has grown from one to nine; while the distribution of Pará seeds has increased since 1904 from 55,000 to 300,000 in 1910, and that of plants from 12,000 in 1906 to 29,000 in 1910. The total staff has risen in number from 2 in 1890 to 27 in 1911.

ENGLISH ENTERPRISE IN GERMAN EAST AFRICA.

"Manihot Rubber Plantations" is the style of an English company, registered nearly three years ago with a capital equaling $250,000, for the acquisition of two estates aggregating 1950 acres, about 18 miles from Tanga, German East Africa. According to the report issued December, 1911, it was expected to complete by the following March the planting of 350,000 *Manihot* trees; a sufficient acreage remaining unplanted for a further 150,000 trees.

While some 300,000 trees on the younger plantations are expected to begin coming into bearing towards the end of the present year, the results obtained from trees already matured have been sufficiently favorable, to encourage the company to arrange for dealing with the larger yield anticipated for 1914 and succeeding years. The resident manager reports that he is now engaged in removing the rubber cleansing factory from Tanga to the plantations, which will permit of the cleansing taking place immediately after tapping; with an anticipated improvement in the condition and color of the "Manihot crepe" produced.

RUBBER GROWING IN COCHIN.

A Cochin planter writes the "South of India Observer," that there are about a dozen rubber estates opened in the Cochin States, under a contract of 50 years, with certain conditions. He adds that in view of the exorbitant expenses of rubber cultivation, while the price of rubber is going down every now and then, and with artificial rubber over our heads like a sword of Damocles—the Cochin government should be a little more farsighted. The writer of the letter suggests that it should consent to receive at present only about one-half of the contract amount, which would be a great boon to rubber planters in Cochin, and would furnish a good incentive for more openings.

According to the latest accounts, there are now 37 rubber planting companies in South India, against 34 a year ago.

PROPOSED TROPICAL COLLEGE FOR CEYLON.

AT one time the mere gathering of tropical produce brought wealth to the discoverers, but now-a-days systematic and scientific cultivation is imperatively needed. Special training is moreover required, as the most efficient agriculturist of the West, when called to reside in the East, has to start his agricultural education afresh, building up his knowledge by experience.

The prominence given to the subject of a Tropical Agricultural College through the article in the London "Times," referred to editorially in the April issue of this journal, has attracted attention in the East. The Ceylon "Observer," in commenting on the proposition of such a college in the West Indies, remarks:

"The idea of such a university is one worthy of every support, for its success would mean profitable employment for those in the tropical zone and those at home. The scheme is full of possibilities, and it is to be hoped, will materialize. . . . Rubber is a case in point."

Meanwhile it is of interest to note, that an effort is being made in Ceylon to secure the Tropical College for that island. A strong and representative committee has been formed, which has held several meetings with that object in view. A memorandum had been drawn up urging that Ceylon is the most centrally situated tropical possession of the British Crown and therefore the most convenient center in the East for the college, with, moreover, its tropical planting industries at hand.

Peradeniya, it is remarked, is already a center of study, research and instruction, and would be the most suitable location for the college, which would subsequently become one of the colleges of the University of Ceylon, when the latter was established in the course of time. A site of 40 acres had been reserved for college buildings on this experimental station, which covers 500 acres. Rubber, tea, cocoa and cocoanuts are now grown on plantations, while experiments are conducted with a variety of other product. With this view, the raising of a fund to go towards the endowment of such a college was proposed in the memorandum.

On the suggestion of Mr. E. Rosling, a cable was drafted to the London "Times," drawing attention to the meetings and to Ceylon's reasons for asking for the college. The memorandum referred to was drawn up by Mr. R. N. Lyne, the Director of Agriculture.

OFFICIAL REPORT ON CEYLON EXHIBIT AT NEW YORK.

IN the April number of THE INDIA RUBBER WORLD reference was made to the report of Mr. Leonard Wray, the Malayan Commissioner, upon his section at the New York exposition. Since then the report of Mr. F. Crosbie-Roles, the Ceylon commissioner, dealing with the exhibit under his charge, has come to hand in the "Times of Ceylon," of which he is editor.

In his opinion, the New York International Rubber Exposition was a decided success from the plantation-producers' point of view. He adds, that as all plantation rubber is called Ceylon rubber by the trade in America, it would have been lamentable had the island not participated in the first exposition in the country of largest consumption. He refers to the rubber-testing machines of the Bureau of Standards, Washington; suggesting that it would be desirable to offer that department samples of first grade Ceylon rubber, with a view to best plantation being mentioned in future specifications, for which hard fine Pará continues to be the sole standard.

Reference is made to the commissioner's efforts to promote the establishment of a fast line of steamers from Ceylon to the Atlantic ports of America, in view of the largely increased shipments of rubber and other produce. The British Consulate General at New York had promised to do all in its power to facilitate trade between Ceylon and America.

With reference to the question of direct trading as compared with purchases for America through London, Mr. Crosbie-Roles remarks that the increased consumption of plantation rubber is what all planters desire, and that it will soon be demonstrated whether London can maintain its position as the chief medium between the East and West.

With regard to the American consumption of rubber, the commissioner expresses the opinion that America will want all Ceylon can supply; adding that there would be a great improvement in evenness of quality as the trees matured, and as the output of the individual plants became larger manufacturers would also better understand plantation rubber.

Many other features of the exposition and conference are likewise dealt with in this interesting report.

PLANTERS' ASSOCIATION OF CEYLON.

RUBBER occupied a leading position among the subjects dealt with at the recent annual meeting of the Planters' Association of Ceylon, when the fifty-ninth yearly report was presented.

During the past season new clearings had not been extensive; operations of this character having been chiefly limited to clearing and planting by the small native land owners. Owing to the S. W. monsoon having been abnormally heavy, tapping was carried on with difficulty in certain districts, with a consequent loss of crop.

While pricking is still in vogue in some cases, tapping is principally restricted to paring. The importance is emphasized of only cutting bark, which is completely renewed. Differences of opinion have prevailed as to thinning out; there being some advocates of a maximum number of a hundred trees per acre, while others claim that 150 or even 200 trees to the acre can be grown if kept in a high state of cultivation.

With regard to preparation, a tendency is recorded towards the smoke cure; the benefits of which consist in the action of the constituents of the smoke, directly upon the proteid matter contained in the rubber latex. It is considered necessary to retain as much proteid matter as possible in the prepared rubber. The report continues:

"This question is an important one, if plantation rubber is to compete, quality for quality, with the product of the Amazon which is at present the acknowledged standard. There is undoubtedly room for a large amount of research work in this connection, together with the invention of machinery and appliances to carry it out economically and on practical lines."

Total shipments of Ceylon rubber had been: 1909—1,372,416 pounds; 1910—3,298,652 pounds; 1911—7,154,658 pounds; 1912—15,001,075 pounds.

Reference was made in the report to the benefits Ceylon might anticipate from participation in the recent New York exposition.

In addressing the meeting, Mr. G. G. Bliss, the retiring chairman, moved the adoption of the report and referred to the services rendered planting interests by Sir Henry McCallum, the retiring governor, particularly through the creation of an Agricultural Department. He likewise alluded to the benefits the planting community would receive from the appointment of Mr. R. N. Lyne, as head of that department.

Among other subjects, the question of motor transport was discussed; a committee being appointed to deal with the matter, in its relation to Ceylon planting interests.

INCREASED YIELD OF LUMUT ESTATES.

At the recent annual general meeting of this company, it was stated that the original estimate of 60,000 pounds of rubber for the year 1912 had been more than doubled in the actual yield, which amounted to 139,000 pounds. The estimate for the current year is about 250,000 pounds.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED MARCH 4, 1913.

No. 1,054,679. Demountable rim for resilient wheels. S. A. Currin, Bristol, England.

1,054,692. Automobile wheel. G. A. Imhoff, Carrington, N. D.

1,054,696. Fountain-mop. I. L. Lewis, Syracuse, N. Y.

1,054,762. Automobile pump. R. A. Goeth, R. B. Rodgers and J. A. Dittmar, San Antonio, Tex.

1,054,802. Instrument used for diagnostic purposes in obstetrical practice. Harry Spiro, San Francisco, Cal.

1,054,820. Tire with detachable tread. J. A. Bowden, Los Angeles, Cal.

1,054,842. Hose-coupling. A. Heimerman, Syracuse, N. Y.

1,054,863. Gasket. C. S. Parker, London, Ontario, Canada.

1,054,935. Governing mechanism for elastic-fluid turbines. M. M. Pearson, assignor to General Electric Co.—both of Schenectady, N. Y.

1,054,980. Tire attachment. R. L. Morgan, Worcester, Mass.

1,055,029. Vehicle-wheel. G. L. and H. C. Garrett, Richmond, Indiana.

1,055,111. Crutch tip. W. R. Wilcox, Ypsilanti, Mich.

1,055,118. Elastic supporter. A. V. Ziegler, Los Angeles, Cal.

1,055,283. Spring-hub wheel. E. Kreh, Mare Island, Cal.

Design.

43,673. Golf-ball. A. Johnston, Edinburgh, Scotland.

ISSUED MARCH 11, 1913.

1,055,326. Drilling-cable. T. Gore, New York.

1,055,333. Resilient wheel. E. J. Kreis, Mendota, Ill.

1,055,372. Tire-armor. A. Turnbull, Glasgow, Scotland.

1,055,404. Saturating machine. F. W. Kremer, Rutherford, N. J.

1,055,430. Machine for treating coated fabrics. A. Thoma, Cambridge, Mass., assignor to Clifton Mfg. Co., Jersey City, N. J.

1,055,444. Pneumatic slack-adjuster. C. P. Cass, Maplewood, Mo., assignor to The Westinghouse Air Brake Co., Pittsburgh, Pa.

1,055,472. Tire. M. L. Keagy, Canton, Ohio.

1,055,477. Hose-coupling. E. J. Lombard and O. L. Krogstad, Hudson, Wis.

1,055,496. Vehicle wheel-rim. E. C. Shaw, assignor to The United Rim Co.—both of Akron, Ohio.

1,055,507. Pen. C. F. Backmyer, Chicago, Ill.

1,055,573. Tire. H. C. Tripp, Auburn, N. Y.

1,055,696. Wheel-rim. F. R. Barker, assignor to J. C. Lewis.—both of Boston, Mass.

1,055,709. Automobile-wheel. W. W. Cheeseman, Cincinnati, Ohio.

1,055,750. Resilient wheel. R. J. Hughes, Houston, Tex.

1,055,774. Pneumatic-tire casing. N. W. McCleod, assignor to American Tire Co.—both of St. Louis, Mo.

1,055,895. Resilient wheel. W. J. Faber, Oneida, N. Y.

1,055,946. Attachment for fire nozzles. C. Scheer, Silverton, Col.

Design.

42,701. Vehicle-tire. H. J. Richards, assignor to The L. & M. Rubber Co.—both of Carrollton, Ohio.

Trade Marks.

36,372. Condensite Co. of America, Glen Ridge, N. J. The word *Condensite.* For solid plastic compounds, etc.

38,948. Weissfeld Bros., New York. Illustration of a globe map. Rubber aprons, etc.

ISSUED MARCH 18, 1913.

1,056,010. Plastic packing. F. A. Dailey, St. Paul, Minn.

1,056,013. Tire-vulcanizer. C. I. Dodson, Pittsburgh, Pa.

1,056,033. Pneumatic cleaner. J. Kubosch, Milwaukee, Wis.

1,056,082. Anti-skid device for wheels. F. Young, Newark, N. J.

1,056,109. Vehicle-wheel. W. B. McFadden, Syracuse, N. Y.

1,056,113. Feeding-bottle. E. Watkin, Morgan, Wyomissing, Pa.

1,056,136. Demountable rim. A. Denis, Springfield, Mass.

1,056,167. Cushion-tired wheel. N. Gratz, Boise, Idaho.

1,056,184. Hose-coupling lock. F. T. Kitchen, West New Brighton, N. Y., assignor to Gold Car Heating & Lighting Co., New York.

1,056,188. Hose clamp. Sidney J. Linton, Groveland, N. Y.

1,056,208. Hose rack. C. Nuhring, Cincinnati, Ohio.

1,056,278. Vehicle wheel. T. B., K. E., C. T. and H. W. Jeffery, Kenosha, Wis.

1,056,390. Aeroplane. P. Anderson, Freeport, and Aage Nielsen, New York, assignors to Anderson-Nielsen Airship Co., New York.

1,056,506. Air hose coupling and uncoupling tool. C. L. Courson, Pitcairn, Pa.

1,056,521. Spring vehicle wheel. W. H. Fahrney, Chicago, Ill.

1,056,539. Fountain pen. G. W. Heath, Newark, N. J.

1,056,554. Resilient wheel. J. Kohler, Chicago, Ill.

1,056,591. Vehicle wheel. W. E. Schilling, Kansas City, Mo.

1,056,597. Cushion wheel. W. D. Simpson, Columbia, S. C.

1,056,617. Bicycle pump. E. B. Wright, St. Helena, Cal.

1,056,642. Anti-slipping device for vehicle wheels. W. P. Deonier, Harrah, Okla.

1,054,664. Automobile wheel. G. L. Griffith, Blockton, Iowa.

1,056,726. Tube for automobiles, bicycles and the like. E. J. Andrieu, Roubaix, France.

Trade Marks.

62,087. Gold Medal Water-Proofing Co., Oakland, Cal. The word *Walrus.* For water proof coats.

63,876. Frank Duttenhofer, Cincinnati, Ohio. The words *Cincinnati Gasket & Packing Co.* in circle. Metallic, gum and other gaskets, etc.

ISSUED MARCH 25, 1913.

1,056,828. Ventilating cushion for boots and the like. W. B. Price, New York, assignor to Sponge Rubber Inner Heel Co., New York.

1,056,844. Aeroplane. J. T. Simpson, Newark, N. J.

1,056,976. Vehicle tire. B. H. Devine, Utica, N. Y.

1,056,977. Tire. B. H. Devine, Utica, N. Y.

1,056,988. Respirator. S. W. Greene, East Greenwich, R. I.

1,056,994. Vehicle wheel. V. J. Hultquist, Bellevue, Pa.

1,057,002. Elastic fluid turbine. T. J. Loftus, Castella, Cal.

1,057,083. Vehicle tire. M. C. Overman, New York.

1,057,108. Overshoe holder. E. J. Akins, Moundsville, W. Va.

1,057,164. Tire. J. H. Messenger, London, England.

1,057,232. Tire. J. R. Gammeter, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

1,057,333. Method of attaching rubber to metals. L. Daft, Rutherford, N. J., assignor to Electro-Chemical Rubber & Mfg. Co., New Jersey.

1,057,388. Emergency automobile tire. F. L. Bigsby, Kirksville, Mo.

1,057,396. Hose supporter stud. R. Gorton, Newton, Mass.

Design.

43,738. Hoof pad. J. H. Curley, Brockton, Mass.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 5, 1913.]

24,899 (1911). Rubber steps for vehicles. A. Upton, 21 Albert Road, Peckham, London.

24,915 (1911). Treating bunions. F. J. Scholl, 5 Manchester avenue, Aldersgate street, London.

25,020 (1911). Inflation of motor vehicle tires. R. A. Rogers, St. Cleer, Wilton Park Road, Shanklin, Isle of Wight.

25,066 (1911). Veil fastenings. G. Barnett, 36 Dunsmure Road, Stamford Hill, London.

25,102 (1911). Tread bands. W. Long, 48 The Avenue, Southampton.

25,129 (1911). Detachable linings for mackintoshes. A. E. Tarbuck, Ness Holt, Ainsdale, and G. B. Carr, 537 Land street, Southport—both in Lancashire.

25,134 (1911). Medical compresses. R. D. Johnson, Bagshot House, and E. S. and H. B. Hudson, Pengelly—both in Bush Hill Park, Enfield, Middlesex.

25,201 (1911). Jointing rubber articles. H. Gare, 230 Bristol Road, Edgbaston, Birmingham.

25,213 (1911). Wheel for dealing cards. H. Hurm, 14 Rue Jean Jacques Rousseau, Paris.

25,248 (1911). Spring wheels with pneumatic cushions. A. Roe, 5 Waterloo Square, Anna Valley, Andover, Hampshire.

25,256 (1911). Coagulation of rubber latex. A. C. Davidson, Sirocco Engineering Works, Belfast, Ireland.

25,286 (1911). Plastic compositions. R. H. Pybus, 74 Kedleston Road, and E. M. Pybus, The Old Lodge, Markeaton street—both in Derby.

25,329 (1911). Jackets and covers for wheel tires. E. Dankmann, 10 Catharinen Canal, St. Petersburg.

25,333 (1911). Anti-skid device on twin tires. A. Bosshard, Arbon, Switzerland.

25,360 (1911). Tire attachments to rims. L. Scaglia, 4 Rue Neuve, Nyon, Switzerland.

25,449 (1911). Plastic compositions. W. Plinatus, 8 Xantenerstrasse, Berlin.

*25,453 (1911). Pneumatic cushions for wheels. A. J. Wolff, Hartford, Conn., U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 12, 1913.]

25,541 (1911). Repairing patches for boots. Deutsche Gummiwaren-Industrie, O. Schlappig & Co., and O. Schlappig, 10 Lorettostrasse, Dusseldorf, Germany.

25,637 (1911). Making pneumatic tires, etc. F. H. Rushton, 158 Grimsby Road, New Cleethorpes, Lincolnshire.

25,747 (1911). Detachable rims. E. F. and G. W. Goodyear Reliance Works, Dudley, Worcestershire.

25,782 (1911). Pneumatic cushions in wheels. J. Algie, 6 Algonquin avenue, Toronto, Canada.

25,805 (1911). India-rubber substitutes. W. Plinatus, 39a Kornbergstrasse, Stuttgart, Germany.

25,845 (1911). Mud guards for wheels. C. Stride, Summersdale, Chichester.

25,872 (1911). Pneumatic cushions in wheels. C. Stride, Summersdale, Chichester.

25,882 (1911). Rubber and canvas tubes. W. E. Carmont, 55 Queen's Road, Richmond, Surrey.

25,883 (1911). Rubber insertions for tires. W. E. Carmont, 55 Queen's Road, Richmond, Surrey.

25,931 (1911). Detection of punctures. G. H. E. Cooke, 17 St. Edmunds Terrace, Regents Park, London.

25,942 (1911). Making cycle rims. G. W. Dawes, Monastery Bldgs., Upper Priory, Birmingham.

25,993 (1911). Fabric foundations for tire covers. H. Theis, 13½ Viktoriastrasse, Cassel, Germany.

26,016 (1911). Making pneumatic tires. P. A. Newton, 6 Breams Bldgs., Chancery Lane, London.

26,049 (1911). Air tubes and chambers. St. Helens Cable and Rubber Co., Arpley, and G. W. Price, 182 Wilderspool Causeway—both in Warrington, Lancashire.

26,121 (1911). Vehicle wheels. G. Hookham, and J. A. Harrison, 7 New Bartholomew street, Birmingham.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 19, 1913.]

26,285 (1911). Pneumatic treads. D. Marshall, 30 Winchcombe street, Cheltenham.

26,424 (1911). Boot protectors. R. Stelling, 17 North street, Scarborough.

26,479 (1911). Horseshoes. R. G. W. Pockett, Daisybank, Leckhampton, Gloucestershire.

*26,591 (1911). Detachable rims. B. C. Ball, 482 Harrison street, and L. E. Younie, 71 Seventh street—both in Portland, Oregon, U. S. A.

*26,612 (1911). Compound fabric for pneumatic tires. L. A. Subers, 1722 E. 85th street, Cleveland, Ohio, U. S. A.

26,622 (1911). Waterproof fabrics. G. M. Anderson, and Anderson, Anderson and Anderson, St. Paul's Churchyard, London.

26,623 (1911). Compound waterproof fabrics. G. N. Anderson, and Anderson, Anderson and Anderson, St. Paul's Churchyard, London.

26,631 (1911). Syringes. J. R. Bullen, Parnell, Auckland, New Zealand.

*26,647 (1911). Valves. M. Levrant, 181 Greenwich street, New York, U. S. A.

26,681 (1911). Clips for tires. W. C. Sneyd, 145a Northenden Road, Sale, Cheshire, and D. V. Jones, 5 Cumberland street, Deansgate, Manchester.

26,685 (1911). Inflating vehicle tires while in motion. R. E. Darnley, Langwood, Huddersfield.

26,698 (1911). Rubber studs for tires. G. W. Beldham, Boston Lodge, Ealing, London.

26,740 (1911). Studs for tires. M. Lorme, 9 Bread street Hill, London.

26,753 (1911). Grooves in tire covers. A. Latrille and L. Charmantier, 77 Rue Michelet, Paris.

26,837 (1911). Belts and bands. C. H. Gray, care of India Rubber, Gutta Percha, etc., Works Co., Silvertown, London.

26,838 (1911). Belts and belt fastenings. C. H. Gray, care of India Rubber, Gutta Percha, etc., Works Co., Silvertown, London.

26,840 (1911). Air tubes or chambers. J. A. Meunier, 43 Rue Laffitte, Paris.

26,843 (1911). Vacuum cleaning apparatus. J. Bamberger, 7 Fredriciastrasse, Charlottenburg, Germany.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 27, 1913.]

26,900 (1911). Vocal instruments. R. Beel, 17 Raeburn street, Acre Lane, Brixton, London.

26,978 (1911). Spring wheel with solid tire. S. A. Horstmann, Monmouth Place, Bath, and C. A. Lister, The Priory, Dursley, Gloucestershire.

26,995 (1911). Mud guards. W. R. Birt, West Lodge, Western Road, Wylde Green, near Birmingham.

27,004 (1911). Non-skid device for pneumatic tires. L. I. Perry, 155 Haverstock Hill, Hampstead, London.

27,081 (1911). Spring wheels with pneumatic cushions. H. Payton, "Hedingham," Wellington Road, Edgbaston, and J. Davies, 36 Arthur Road, Erdington—both in Birmingham.

27,095 (1911). Siphon bottles. J. R. Trigwell, 8 Mayall Road, Brixton, London.

27,245 (1911). Molds for vulcanizing tires. Soc. Generake des Etablissements Bergougnan, Clermont-Ferrand, Puy de Dome, France.

*27,289 (1911). Capsuling bottles. A. L. Weissenthanner, Bayonne, N. J., U. S. A.

*27,299 (1911). Wheel tires. A. H. Shoemaker, 1025 E. 33rd street, Portland, Oregon, U. S. A.

27,319 (1911). Removal of tire covers. C. Ogden, 53 Trafford Road, Salford, Lancashire.

27,335 (1911). Non-skid devices. W. C. Gobbett, 19 Cecil Mansions, Marius Road, Balham, London.

27,424 (1911). Treating rubber latex. G. W. Sutton, Crofton Cottage, Stevenage, Hertfordshire.

27,478 (1911). Supporting and protecting cocks' combs. F. P. Dinger, Wolfersdorf, Sachson-Weimar, Germany.

27,506 (1911). Horseshoe tires. A. Folliet-Mieusset, 17 Rue des Chartreux, Brussels, and R. van de Casteele, 1 Rue du Moulin, Ledeberg lez Gand, Belgium.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

447,619 (August 24, 1912). F. W. Smith. Improvements in vehicle tires.

447,730 (August 29). C. R. Terrell. Repair stopper for tire punctures.

447,834 (August 31). M. G. C. Dodwell. Elastic tire for vehicles.

447,917 (September 3). E. Bessonnet. Mud guards for wheels of automobiles and other vehicles.

447,962 (September 5). J. Theroulde and E. de Huertas. Process for replacing treads of pneumatic tires.

447,904 (September 27). Société Thomas, Bazin, Casanova & Co. Process for manufacture of artificial rubber.

448,005 (September 5). A. Bloch and F. Arena. Elastic tires.

448,108 (November 17, 1911). G. Reynaud. Process of rubber manufacture.

448,035 (November 16). E. Vincent. Solid rubber tires for vehicles.

448,068 (September 7, 1912). A. Fraissier Fils. Mud guard for automobiles.

448,139 (September 18). M. M. Weiss. Elastic tire.

448,169 (September 11). M. Baudon & R. Baudon. Elastic vehicle wheel.

448,170 (September 11). J. Florin. Mud guards for vehicle wheels.

448,273 (September 13). J. Savoie. Tire cover for wheels.

448,419 (November 25, 1911). Desmettre. Improvement in pneumatic tires.

448,433 (September 18, 1912). L. Chapirot. Circular revolving mud guard for vehicle wheels.

448,438 (September 18). S. Laville. Cover for pneumatic tires.

448,456 (September 19). J. J. Butler. Pneumatic tire.

448,520 (September 19). Diamond Rubber Co. Process for preparation of substance analogous to rubber.

448,573 (November 29, 1911). R. Legrand. Elastic tire and method of manufacture.

448,627 (September 24, 1912). Hanovija and Milkorie. Armed anti-skid cover.

448,644 (September 24). E. Licot. Articulated elastic mud guard, easily mounted and dismounted.

448,663 (December 2, 1911). G. Reynaud. Process of rubber manufacture.

448,711 (August 5, 1912). H. Dreyfus. Process for the manufacture of synthetic rubbers and of their intermediate products.

448,744 (September 18). V. Gandon. Machine for manufacture of pneumatic tires.

448,796 (September 27). G. Dezavis. Mud guard for vehicles with rubber wheels.

448,860 (September 30). L. Demuth. Mud guards for autobusses and other vehicles.

448,968 (July 6). H. P. Plicht. Tire for automobiles.

448,980 (September 18). C. Friederich. Elastic tire for vehicles of all kinds.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

258,450 (May 12, 1912). Appliance for tapping the latex of rubber or other trees. George M. von Hassel, Königgrätzerstrasse 87, Berlin.

258,460 (March 3, 1912). Process for manufacture of rubber tires and covers with radial screw springs. A. E. Wale, Coleshill, England.

258,532 (November 28, 1911). Tire fastenings. Otto Eisele, Möhringen, near Stuttgart.

258,899 (April 7, 1911). Coagulation and disinfection of rubber latex. Martin Hohl, Colombo, Ceylon.

258,872 (June 25, 1912). Manufacture of soles from rubber and leather. Max Singenwald, Elisenstrasse 57, Leipzig, and August Schreiber, Leipzig, Sellerhausen.

259,124 (March 10, 1911). Rubber washing machine. Max Frankel & Runge, Spandau.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

252,849 (1913). Molding core for the manufacture of hollow rubber objects; more specially of air chambers for pneumatic tires. H. Zeimer, Kaiserstrasse 125, Carlsruhe, Germany.

252,531 (1913). Process of manufacture of rubber substitutes for industrial uses. O. Rohm, Weisterstadterstrasse, Darmstadt, Germany.

252,749 (1913). Process for manufacture of elastic substances possessing the properties of rubber and products resulting therefrom. W. E. Reeser, Amsteldyk 46, Amsterdam, Holland.

252,906 (1913). Manufacture by means of ethers and cellulose, of rubbers and other ingredients. L. Collardon, Glen Lyn, Greenfort avenue, Hanwell, England.

252,623 (1913). Process of preparation of a substance resembling rubber, and product resulting therefrom. Farbenfabriken vorm. F. Bayer & Co., Leverkusen, Germany.

252,907 (1913). Compositions with a foundation of rubber and their manufacture. L. Collardon, Glen Lyn, Greenfort avenue, Hanwell, England.

Report of the Crude Rubber Market.

THE most prominent feature of the London market during April has been the steady fall in the price of fine Pará from 3*s.* 10¼*d.*, at which it stood on March 26, to 3*s.* 3¼*d.* on April 15; the lowest point reached during the month. An improvement then set in which brought the price on the 21st to 3*s.* 6*d.*; since which time it has receded to 3*s.* 4½*d.*, on the 26th at time of writing; the net reduction for the month being 6¼*d.*

Manufacturers seem to be still holding aloof from operations exceeding actual requirements. In many cases the opinion is entertained that supplies can be replenished on a lower basis of values, caution in purchasing being thus the order of the day.

In harmony with the movement of fine Pará, plantation rubber dropped almost continuously during the month; the prices for first latex giving way from 3*s.* 10¼*d.* on March 26, to 3*s.* 2½*d.* on April 26. The two standards were quoted:

	Pará.	*Plantation.*
March 26	3*s.* 10¾*d.*	3*s.* 10¼*d.*
April 26	3*s.* 4½*d.*	3*s.* 2½*d.*

Following the Easter holidays came the plantation auction of April 1, when 890 tons were offered. As compared with the previous sale of March 18, a reduction of 6*d.* per pound was established by the close of the third day's sale. The opinion was expressed that the fall has come very inopportunely and will affect all branches of the trade.

Statistics of the London auctions up to and including the first April sale showed up to that point total offerings in 1913 of 6,129 tons, as compared with 3,891 tons for the corresponding period of 1912. Average prices realized at the seven series covered by the statistics for 1913 showed a decline during the three months from 4*s.* 5½*d.* to 3*s.* 5½*d.*

Notwithstanding the increase of 2,238 tons in quantity offered, London stocks of plantation rubber on March 31 represented in 1913 2,790 tons, as compared with 1,849 tons a year earlier; the augmentation in quantity being thus only 941 tons. Another healthy sign is the fact that the London deliveries from January 1 to March 31 were this year 6,980 tons, against 4,027 last year during the same period.

The second April sale on the 15th included 1,013 tons, which sold at an average of 6*d.* to 7*d.* below the rates of the previous sale. As to the future course of the market, it was considered that in view of the large quantities still coming forward, the prospect of any rise in values depends upon a more active demand from the United States.

The Hamburg market has been very quiet during the month, but prices have not been much influenced by the London plantation auctions.

At the Amsterdam sale of April 11, 82 tons were offered, of which 69 tons sold. The quantity placed on sale included 56 tons *Hevea*, 21 tons *Ficus* and 5 tons of other descriptions. *Hevea* realized 17 per cent, and *Ficus* 20 per cent. below valuations.

A sale was announced for April 23 at Antwerp of 453 tons Congo and other sorts and 77 tons plantation.

New York Quotations.

FOLLOWING are the quotations at New York for Pará grades, one year ago, one month ago, April 29—the current dates:

PARA.	May 1,'12.	Apr. 1,'13.	Apr. 29,'13.
Islands, fine new	110@111	89 @ 90	80@ 81
Islands, fine, old	112@113	.....	.....
Upriver, fine, new	112@113	92 @ 93	82@ 83
Upriver, fine, old	115@116	.....	.....
Islands, coarse, new	63@ 64	43 @ 44	39@ 40
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	93@ 94	66 @ 67	55@ 56
Upriver, coarse, old	.....	.....	.....
Cametà	67@ 68	48 @ 49	42@ 43
Caucho (Peruvian) ball	93@ 94	70 @ 71	57@ 58
Caucho (Peruvian) sheet	.....	.....	.....
PLANTATION CEYLONS.			
Fine smoked sheet	126@127	97 @ ..	81@ 82
Fine pale crepe	125@126	95 @ ..	80@ ..
Fine sheets and biscuits	119@120	92 @ ..	80@ ..
CENTRALS.			
Esmeralda, sausage	92@ 93	68 @ ..	56@ ..
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	91@ 92	.....	55@ ..
Panama	.....	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	91@ 92	.....	55@ 56
Mexican, slab	.....	.....	.....
Mangabeira, sheet	.....	.....	.....
Guayule	.....	64 @ ..	.....
Balata, sheet	85@ 86	.....	.....
Balata, block	.....	.....	.....
AFRICAN.			
Lopori, ball, prime	Africans were neglected owing to low prices ruling for Pará.	.....	.....
Lopori, strip, prime		.....	.....
Aruwimi		80 @ ..	65@ ..
Upper Congo, ball red		90 @ ..	75@ ..
Ikelemba		.....	.....
Sierra Leone, 1st quality		.....	.....
Massai, red		88 @ ..	74@ ..
Soudan Niggers		.....	.....
Cameroon, ball		63½@ ..	60@ ..
Benguela		63 @ ..	.....
Madagascar, pinky		.....	.....
Accra, flake		25 @ ..	.....
EAST INDIAN.			
Assam	.....	83 @ ..	.....
Pontianak	.....	8 @ ..	.....
Borneo	.....	.....	.....

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During April the condition of the money market as regards commercial paper has improved somewhat, there being a better demand, especially the last half of the month, but rates have held high, the best rubber names ruling at 5½@6 per cent., and those not so well known 6@6½ per cent."

NEW YORK PRICES FOR MARCH (NEW RUBBER).

	1913.	1912.	1911.
Upriver, fine	$0.88@ .96	$1.11@1.23	$1.45@1.66
Upriver, coarse	.64@ .72	.93@ .99	1.08@1.18
Islands, fine	.85@ .92	1.08@1.18	1.30@1.56
Islands, coarse	.41@ .47	.63@ .67	.62@ .90
Cametá	.43@ .48	.66@ .72	.79@ .92

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound—are practically unchanged.

	April 29, '13.
Old rubber boots and shoes—domestic	9⅝@ 9¾
Old rubber boots and shoes—foreign	9½@ 9⅝
Pneumatic bicycle tires	6¼@ 6⅜
Automobile tires	10 @10⅛
Solid rubber wagon and carriage tires	9¼@ 9½
White trimmed rubber	11 @11½
Heavy black rubber	4¾@ 5
Air brake hose	6 @ 6½
Garden hose	1⅝@ 1½
Fire and large hose	2 @ 2¼
Matting	½@ ¾

STATISTICS PARA INDIA RUBBER (IN TONS).

(Including Caucho.)

STATISTICS FOR THE MONTH OF MARCH.

	Pará.	Caucho.	1913. Tons.		1912. Tons.	1911. Tons.	1910. Tons.
Receipts at Pará	2,900	1,360	= 4,260	against	4,400	3,530	5,210
Shipments to Liverpool	1,410	860	= 2,270	"	1,830	2,150	2,780
Shipments to Continental Ports	590	330	= 920	"	380	320	620
Shipments to America	1,500	300	= 1,800	"	2,680	690	1,280
American Imports	1,370	200	= 1,570	"	2,570	1,100	3,200
American Deliveries	1,770	130	= 1,900	"	2,610	810	3,090
Liverpool Imports	1,485	593	= 2,078	"	1,940	2,191	1,681
Liverpool Deliveries	1,035	670	= 1,705	"	2,140	764	1,751
Continental Imports	440	250	= 690	"	390	350	380
Continental Deliveries	420	240	= 660	"	380	320	380

VISIBLE SUPPLY—1st April, 1913.

	1913. Pará.	1913. Caucho.		1912.	1911.	1910.
Stock in England, Pará, 1st hands	1,021	.....	1,390	689	292
Pará, 2nd hands	129	.....		3,029	255
Caucho	.....	403	290	719	202
Stock in Pará, 1st hands	530	110	260	960	90
2nd hands	270	150	450	220	950
Syndicate	810	.....	2,240	2,870	.....
Stock in America	310	180	90	450	260
Stock on Continent	30	20	70	130	20
Afloat—Europe	1,270	880	1,350	1,400	3,040
Afloat—America	800	200	840	230	170
	5,170	1,943			
Total Visible Supply, including Caucho.	7,113		6,980	10,697	5,279

CROP STATISTICS—30th June, 1912, 31st March, 1913.

	Pará.	Caucho.	1912/13.	1911/12.	1910/11.	1909/10.
Pará Receipts			1912/13	27,100	6,330	
			1911/12	25,670	4,440	
			33,430	30,110	29,230	32,180
Pará Shipments to Europe	14,110	4,630	18,740	15,530	15,160	15,580
Pará Shipments to America	13,880	2,100	15,980	16,150	10,530	15,820
England Landings, net			12,862	11,057	11,152	10,702
England Deliveries, net			12,679	14,447	9,485	11,074
America Landings, net			15,310	17,745	10,770	16,010
America Deliveries, net			14,990	17,555	10,460	16,540
Continental Imports, net			3,680	2,640	2,500	1,980
Continental Deliveries, net			3,725	2,680	2,420	1,990

POSITION—1st April, 1913.

Decrease in Receipts during March, 1913, against March, 1912	140
Increase in Receipts—Crop, July/March, 1912/13, against 1911/12	3,320
Decrease in Deliveries—Crop, July/March, 1912/13, England and Continent, against 1911/12	723
Decrease in Deliveries—Crop, July/March, 1912/13, America, against 1911/12	2,565
Increase in Visible Supply Pará Grades, against 1st April last year	133
Decrease in Stock, England, March 31st, 1913, against March 31st, 1912	127

WILLIAM WRIGHT & CO., Brokers.

Liverpool, 2nd April, 1913.

During the month 90 tons Pará have been shipped from Europe to America.

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA, 1912.

[In Shillings and Pence Per Pound.]

July 5, 1912	4/9	November 29	4/5½
July 12	4/10	December 6	4/7
July 19	4/10	December 13	4/7
July 26	4/11¼	December 20	4/6½
August 2	4/11	December 27	4/7½
August 9	5/0½	January 3, 1913	4/7¼
August 16	5/0½	January 10	4/6½
August 23	5/2	January 17	4/6½
August 30	5/1¼	January 24	4/5¼
September 6	4/11½	January 31	4/4
September 13	4/9½	February 7	4/2¾
September 20	4/8	February 14	4/3
September 27	4/7	February 21	4/0½
October 4	4/7	February 28	4/0½
October 11	4/7	March 7	3/10¾
October 18	4/6½	March 14	3/11¼
October 25	4/6	March 20	3/11
November 1	4/4½	March 28	3/9½
November 8	4/5	April 4	3/6¾
November 15	4/5¼	April 11	3/4½
November 22	4/5¼	April 18	3/4¼

Liverpool.

William Wright & Co. report [April 1, 1913]:

Fine Pará.—The market has been dull and an easy tendency has prevailed; during the past few days a sharp decline has been experienced, this doubtless owing to strikes and a consequent absence of demand in America, coupled with dear money and ample supplies in Brazil. Closing value of Up River, 3*s.* 8*d.* [89 cents] (a decline of 4*d.* per pound during the month), with indications of still lower prices, though a reaction may come at any time. Receipts this month are 4,265 tons, including 1,365 tons Caucho, against 4,980 tons last month, and 4,400 tons last year, bringing the crop up to date to 33,435 tons, against 30,110 tons last season, showing an increase of 1,430 tons Rubber and 1,895 tons Caucho.

Amsterdam.

Joosten & Janssen report [April 11]:

The result of today's sale must be considered satisfactory in view of the dullness pervading the market generally.

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

March 24.—By the steamer *Christopher,* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	65,300	.....	43,000	.....=	108,300
General Rubber Co	400	.....	27,100	.....=	27,500
Meyer & Brown	36,300	4,100	16,100	.....=	56,500
Meyer & Brown	32,900	13,500	60,600	54,000=	161,000
Henderson & Korn	4,300	.....	1,300	.....=	5,600
Astlett & Co	28,100	19,600	37,400	2,400=	87,500
Ed. Maurer	36,000	6,600	3,200	1,100=	46,900
Hagemeyer & Brunn	3,600	1,800	14,500	600=	20,500
G. Amsinck & Co	9,300	1,300	3,500	1,900=	16,000
Lazard Freres	.....	.....	2,800	.....=	2,800
	216,200	46,900	209,500	60,000=	532,600
MANAOS.					
Arnold & Zeiss	45,200	.....	7,800	10,200=	63,200
General Rubber Co	.....	.....	.....	4,600=	4,600
Ed. Maurer	2,900	700	1,500	200=	5,300
American Export Co	11,400	.....	.....	.....=	11,400
Henderson & Korn	15,800	33,000	500	600=	49,900
Robinson & Co	16,200	.....	37,100	.....=	53,300
	91,500	33,700	46,900	15,600=	187,700
Total	307,700	80,600	256,400	75,600=	720,300

April 4.—By the steamer *Denis,* from Pará and Manáos:

Arnold & Zeiss	130,700	.....	99,700	6,200=	236,600
General Rubber Co	41,200	5,200	30,100	1,300=	77,800
Meyer & Brown	35,000	5,200	2,200	110,900=	153,300
Meyer & Brown	25,700	.....	16,500	.....=	42,200
Henderson & Korn	12,300	.....	32,300	30,200=	74,800
Astlett & Co	1,100	2,500	4,600	.....=	8,200
Ed. Maurer	.....	17,200	39,900	3,000=	60,100
Ed. Maurer	.....	.....	10,400	1,100=	11,500
G. Amsinck & Co	.....	.....	.....	19,000=	19,000
Hagemeyer & Brunn	.....	1,800	6,600	.....=	8,400
	246,000	31,900	242,300	171,700=	691,900
MANAOS.					
Arnold & Zeiss	56,400	.....	20,200	900=	77,500
General Rubber Co	56,700	.....	11,300	.....=	68,000
Ed. Maurer	21,500	1,700	1,700	29,100=	54,000
Robinson & Co	86,500	.....	16,000	1,200=	103,700
Henderson & Korn	6,000	700	19,000	15,700=	41,400
American Export Co	11,400	.....	.....	.....=	11,400
	238,500	2,400	68,200	46,900=	356,000
Total	484,500	34,300	310,500	218,600=	1,047,900

April 14.—By the steamer *Dominic,* from Pará and Manáos:

Arnold & Zeiss	79,300	10,900	100,300	24,100=	214,600
General Rubber Co	69,800	8,300	24,700	4,800=	107,600
Meyer & Brown	24,800	4,500	10,900	52,100=	92,300
Meyer & Brown	21,700	.....	4,500	91,100=	117,300
Meyer & Brown	35,400	3,400	900	.....=	39,700
Ed. Maurer	9,500	28,300	1,700	.....=	39,500
Henderson & Korn	.....	.....	32,300	4,500=	36,800
Astlett & Co	.....	9,500	.....	.....=	9,500
De Lagotellerie & Co	18,900	4,300	19,800	8,400=	51,400
G. Amsinck & Co	10,700	400	52,800	.....=	63,900
G. Amsinck & Co	4,200	600	2,500	3,400=	10,700
	274,300	70,200	250,400	188,400=	783,300
MANAOS.					
Arnold & Zeiss	54,500	11,100	22,700	.....=	88,300
General Rubber Co	16,200	4,500	8,700	2,300=	31,700
Meyer & Brown	.....	3,400	.....	.....=	3,400
Ed. Maurer	6,000	7,100	1,000	3,700=	17,800
Henderson & Korn	28,000	6,000	.....	.....=	34,000
Robinson & Co	12,900	.....	1,800	.....=	14,700
American Export Co	32,500	.....	.....	.....=	32,500
	150,100	32,100	34,200	6,000=	222,400
Total	424,400	102,300	284,600	194,400=	1,005,700

PARA RUBBER VIA EUROPE.

	Pounds.	
MARCH 24.—By the *Carmania*=Liverpool:		
N. Y. Commercial Co. (Fine)...	80,000	
Robinson & Co. (Fine).....	9,000	
James T. Johnstone (Fine).....	7,000	
Raw Products Co. (Fine).....	30,000	
Raw Products Co. (Coarse).....	13,500	139,500
MARCH 31.—By the *Celtic*=Liverpool:		
N. Y. Commercial Co. (Fine).....		47,000
MARCH 31.—By the *Patricia*=Hamburg:		
Various (Fine)		18,000
APRIL 2.—By the *President Grant*=Hamburg:		
Various (Fine)		2,500
APRIL 3.—By the *Oceanic*=Southampton:		
Various (Coarse)		15,500
APRIL 19.—By the *Adriatic*=Southampton:		
Robinson & Co. (Fine).....	11,200	
Raw Products Co. (Fine).....	38,000	
Raw Products Co. (Coarse).....	11,200	60,400

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

	Pounds.	
MARCH 25.—By the *Panama*=Colon:		
Pablo Calvet & Co.....	3,200	
Dumarest Bros. & Co.....	800	
Lanman & Kemp	1,700	
Charles E. Griffin.....	2,000	
American Trading Co.....	1,900	
G. Amsinck & Co.....	2,200	11,800
MARCH 25.—By the *Antilla*=Tampico:		
N. Y. Commercial Co.....	*40,000	
Continental-Mexican Rubber Co.	*34,000	*74,000
MARCH 27.—By the *Clyde*=Colombia:		
J. S. Sambrada & Co.....	3,000	
A. M. Capen's Sons.....	2,500	
G. Amsinck & Co.....	2,500	
Maitland, Coppell & Co.....	3,500	
Isaac Brandon & Bros.....	5,000	
Heilbron, Wolff & Co.....	1,000	17,500
MARCH 27.—By the *Prins Sigismund*=Colombia:		
G. Amsinck & Co.....	1,000	
Wessels, Kulenkampff & Co.....	800	
Heilbron, Wolff & Co.....	200	2,000
MARCH 27.—By the *Creole*=New Orleans:		
Various		4,500
MARCH 29.—By the *Esperanza*=Mexican Ports:		
N. Y. Commercial Co.....	3,500	
Arnold & Zeiss	2,500	
Lawrence Johnson & Co.....	2,000	
J. G. Mollarth	1,800	9,800
MARCH 29.—By the *Zacapa*=Colombia:		
R. del Castillo	3,000	
G. Amsinck & Co.....	1,500	4,500
MARCH 31.—By the *Alianca*=Colon:		
G. Amsinck & Co.....	9,500	
American Trading Co.....	2,800	
J. J. Julia & Co.....	1,500	
Broedermann & Litzrodt.....	1,000	
Gillespie Bros. & Co.....	1,200	
Meyer Hecht	1,000	
M. A. De Leon & Co.....	500	
Colombian Smelting & Ref. Co..	500	18,000
MARCH 31.—By the *Comus*=New Orleans:		
T. N. Morgan.....		1,200
MARCH 31.—By the *Mandeville*=Colombia:		
Manhattan Rubber Mfg. Co.....	1,000	
T. N. Morgan	500	
Rosenthal & Sons.....	1,200	
A. S. Lascelles	300	3,000
MARCH 31.—By the *Patricia*=Hamburg:		
Ed. Maurer		*11,200
APRIL 1.—By the *Westerwald*=Colombia:		
Maitland, Coppell & Co.....	1,000	
Caballero & Blanco.....	4,500	5,500
APRIL 2.—By the *Prince Joachim*=Colombia:		
F. Lapiedra	3,000	
Manhattan Rubber Mfg. Co.....	2,000	5,000
APRIL 3.—By the *Almirante*=Colombia:		
R. del Castillo.....		4,500
APRIL 4.—By the *Mexico*=Mexican Ports:		
Meyer & Brown.....	2,000	
E. Steiger & Co.....	10,000	
Hermann Kluge	1,200	
Willard Hawes & Co.....	1,000	
J. Menendez	500	
Harburger & Stack	7,000	
Various	4,500	26,200
APRIL 4.—By the *Guantanamo*=Tampico:		
Arnold & Zeiss.....	*80,000	
Continental-Mexican Rubber Co.	*44,000	
Ed. Maurer	*40,000	
Harburger & Stack.....	*1,000	*165,000
APRIL 7.—By the *Santiago*=Mexican Ports:		
American Trading Co.....	1,000	
H. Marquardt & Co.....	500	
J. W. Wilson & Co.....	500	2,000
APRIL 7.—By the *Colon*=Colon:		
G. Amsinck & Co.....	8,500	
W. R. Grace & Co.....	2,000	
Wessels, Kulenkampff & Co.....	1,000	
R. G. Barthold & Co.....	1,000	
Meyer Hecht	500	13,000
APRIL 7.—By the *Santiago*=Tampico:		
Mexican Crude Rubber Co.....	*75,000	
Ed. Maurer	*45,000	*120,000
APRIL 7.—By *El Sud*=Galveston:		
Various		*28,000
APRIL 8.—By the *Albingia*=Colombia:		
Mecke & Co.....	1,000	
Winter, Sons & Co.....	2,000	3,000
APRIL 8.—By *El Occidente*=Galveston:		
Various		*13,500
APRIL 9.—By the *Thames*=Colon:		
Maitland, Coppell & Co.....	1,500	
Isaac & Samuel	4,500	6,000
APRIL 9.—By the *Prins Eitel Frederick*=Colombia:		
Wessels, Kulenkampff & Co.....		1,000
APRIL 9.—By the *Carrillo*=Port Simon:		
Isaac Brandon & Bros.....	1,000	
Wessels, Kulenkampff & Co.....	1,000	2,000
APRIL 9.—By the *Pretoria*=Hamburg:		
Adolph Hirsch & Co.....		22,500
APRIL 10.—By the *Antilles*=New Orleans:		
Various		5,000
APRIL 12.—By the *Monterey*=Mexican Ports:		
G. Amsinck & Co.....	6,500	
E. Steiger & Co.....	5,500	
J. W. Wilson & Co.....	2,000	
Mecke & Co.....	1,500	
J. Menendez & Co.....	1,000	
Willard Hawes & Co.....	1,000	17,500
APRIL 14.—By the *Tennyson*=Bahia:		
J. H. Rossbach & Bros.....		24,000
APRIL 14.—By *El Mundo*=Galveston:		
Various		*11,200
APRIL 15.—By the *Altai*=Colombia:		
Winter, Sons & Co.....		2,000
APRIL 16.—By the *Frutera*=Colon:		
Rosenthal & Sons.....	1,500	
A. S. Lascelles & Co.....	500	2,000
APRIL 16.—By *El Cid*=Galveston:		
Various		*6,500
APRIL 16.—By the *Camaguey*=Tampico:		
Continental-Mexican Rubber Co.	*385,000	
Ed. Maurer	*45,000	*430,000
APRIL 17.—By the *Comus*=New Orleans:		
Various		23,000
APRIL 17.—By the *Karl Schurz*=Colon:		
J. S. Sambrada & Co.....	1,700	
Mecke & Co.....	3,000	
Lawrence Import Co.....	500	
Neuss Hesslein & Co.....	500	
M. Keith	1,500	
Camacho, Roldau & Van Sickle..	1,000	8,200
APRIL 17.—By the *Advance*=Colon:		
G. Amsinck & Co.....	6,500	
Pablo Calvet & Co.....	3,000	
Dumarest Bros.	1,000	
Andean Trading Co.....	10,500	
Piza, Nephews & Co.....	5,700	
F. Lapiedra	1,000	
Colombian Smelting & Ref. Wks.	300	
W. R. Grace & Co.....	1,500	29,500
APRIL 18.—By the *Panama*=Colon:		
Ed. Maurer	4,000	
Isaac Brandon & Bros.....	1,000	5,000
APRIL 18.—By *El Rio*=Galveston:		
Various		*130,000
APRIL 21.—By the *Antilla*=Tampico:		
Arnold & Zeiss	*82,000	
Ed. Maurer	*130,000	
Central Mexican Rubber Co....	*110,000	
Mexican Crude Rubber Co.....	*54,000	
C. F. Wells.....	*5,500	*381,500

AFRICAN.

	Pounds.	
APRIL 21.—By the *Morro Castle*=Mexican Ports:		
J. J. Julia & Co.....	2,500	
G. Amsinck & Co.....	4,000	
Meyer Hecht	2,000	
Lawrence Johnson	2,000	
Mecke & Co...	500	11,000
APRIL 21.—By the *Antilla*=Mexico:		
C. F. Wells.....		4,500
APRIL 22.—By the *Allemania*=Colombia:		
Caballero & Blanco.....	2,000	
De Lima, Cortissoz & Co.....	500	2,500
MARCH 24.—By the *Carmania*=Liverpool:		
Arnold & Zeiss.....	11,200	
Various	25,000	36,200
MARCH 26.—By the *Minnetonka*=London:		
Meyer & Brown.....	3,500	
Various	15,000	18,500
MARCH 26.—By the *Emanuele Accame*=Lisbon:		
Various		4,500
MARCH 27.—By the *Finland*=Antwerp:		
Meyer & Brown.....	29,500	
Ed. Maurer	9,000	38,500
MARCH 28.—By the *New York*=Southampton:		
Arnold & Zeiss		26,000
MARCH 29.—By the *Veniero*=Lisbon:		
Various		5,500
MARCH 29.—By the *Cevic*=Liverpool:		
James T. Johnstone		7,000
MARCH 31.—By the *Patricia*=Hamburg:		
Meyer & Brown	23,700	
Ed. Maurer	33,500	
Wallace L. Gough.....	33,500	
Hagemeyer & Brunn	22,500	
Rubber Trading Co.....	7,500	
Various	36,500	157,200
APRIL 1.—By the *Lapland*=Antwerp:		
Arnold & Zeiss		38,000
APRIL 1.—By the *Rochambeau*=Havre:		
Meyer & Brown.....	69,500	
Arnold & Zeiss	18,500	
Ed. Maurer	40,000	128,000
APRIL 2.—By the *President Grant*=Hamburg:		
General Rubber Co.....	5,000	
Ed. Maurer	26,000	
Various	12,500	43,500
APRIL 7.—By the *Franconia*=Liverpool:		
Meyer & Brown		3,500
APRIL 8.—By the *Amerika*=Hamburg:		
Meyer & Brown.....	13,500	
Ed. Maurer	15,500	
Various	14,000	43,000
APRIL 8.—By the *Kroonland*=Antwerp:		
Meyer & Brown		33,500
APRIL 9.—By the *Pretoria*=Hamburg:		
James T. Johnstone	22,500	
Ed. Maurer	12,500	
Wallace L. Gough	23,500	
Various	15,000	73,500
APRIL 11.—By the *Floride*=Havre:		
Various		13,500
APRIL 12.—By the *Baltic*=Liverpool:		
Meyer & Brown.....		1,100
APRIL 14.—By the *Minneapolis*=London:		
Robinson & Co.....	11,500	
Chas. T. Wilson.....	3,500	15,000
APRIL 14.—By the *Rotterdam*=Amsterdam:		
Manhattan Rubber Mfg. Co.....		3,500
APRIL 2.—By the *Hohenfels*=Colombo:		
Meyer & Brown.....	*96,000	
N. Y. Commercial Co.....	*80,000	
Ed. Maurer	*18,500	
Robert Badenhop	*33,500	*228,000
APRIL 2.—By the *President Grant*=Hamburg:		
Ed. Maurer	*11,200	
Charles T. Wilson.....	*17,500	
Various	*15,500	*44,200
APRIL 3.—By the *Oceanic*=Southampton:		
Meyer & Brown.....	*10,500	
Ed. Maurer	*5,000	
Rubber Trading Co.....	*7,000	
Charles T. Wilson.....	*1,800	
Arnold & Zeiss.....	*40,000	*64,300
APRIL 7.—By the *Philadelphia*=Southampton:		
Meyer & Brown.....	*24,000	
Arnold & Zeiss	*27,000	
Charles T. Wilson.....	*11,000	
Ed. Maurer	*3,500	
Rubber Trading Co.....	*7,000	
Goodyear Tire & Rubber Co....	*22,500	
Various	*8,500	*103,500
APRIL 8.—By the *Minnehaha*=London:		
Meyer & Brown.....	*34,600	
Ed. Maurer	*16,500	
General Rubber Co.....	*155,000	
James T. Johnstone.....	*33,500	
L. Littlejohn & Co.....	*4,500	
Various	*9,500	*253,600
APRIL 8.—By the *Kroonland*=Antwerp:		
Meyer & Brown.....	*78,000	
Arnold & Zeiss.....	*67,000	*145,000
APRIL 9.—By the *Olympic*=Southampton:		
Meyer & Brown.....	*18,200	
N. Y. Commercial Co.....	*67,000	
W. Stiles	*3,000	
Ed. Maurer	*2,000	*90,200
APRIL 9.—By the *Ryndam*=Amsterdam:		
James T. Johnstone.....		*5,000
APRIL 10.—By the *Themisto*=Amsterdam:		
Rubber Trading Co.....		*4,500
APRIL 10.—By the *Wildenfels*=Colombo:		
N. Y. Commercial Co.....	*45,000	
Ed. Maurer	*15,000	
H. W. Peabody & Co.....	*3,500	
Meyer & Brown.....	*35,500	*99,000
APRIL 11.—By the *Kabinga*=Colombo:		
N. Y. Commercial Co.....	*56,000	
Meyer & Brown	*50,000	
Ed. Maurer	*5,000	*111,000
APRIL 11.—By the *Floride*=Havre:		
Michelin Tire Co.....		*56,000
APRIL 14.—By the *Indrawadi*=Singapore:		
Malaysian Rubber Co.....	*13,500	
L. Littlejohn & Co.....	*28,000	*41,500
APRIL 14.—By the *Minneapolis*=London:		
Meyer & Brown.....	*30,000	
General Rubber Co.....	*65,000	
Adolph Hirsch & Co.....	*4,500	

James T. Johnstone	*1,100	
Charles T. Wilson	*33,500	
Robinson & Co	*3,000	
Arnold & Zeiss	*56,000	
Ed. Maurer	*5,500	
H. W. Stiles	*5,000	
Henderson & Korn	*15,500	
Various	*25,000	*244,100

APRIL 17.—By the *Majestic*=Southampton:

Ed. Maurer	*15,000	
Rubber Trading Co	*6,500	
Raw Products Co	*2,000	
Ed. Maurer	*10,000	
Willard Stiles	*5,500	*39,000

APRIL 19.—By the *Adriatic*=Southampton:

Meyer & Brown	2,000	
James T. Johnstone	11,200	13,200

APRIL 19.—By the *Vaderland*=Antwerp:

Meyer & Brown		11,200

APRIL 21.—By the *Niagara*=Havre:

Various		7,500

APRIL 22.—By the *Minnetonka*=London:

Various		7,000

APRIL 22.—By the *President Lincoln*=Hamburg:

Meyer & Brown	41,000	
General Rubber Co	11,000	
Ed. Maurer	17,500	
Wallace L. Gough	23,500	93,000

EAST INDIAN.

[*Denotes Plantation Rubber.]

	POUNDS.	

MARCH 24.—By the *Lord Curzon*=Colombo:

Meyer & Brown	*308,000	
N. Y. Commercial Co	*247,000	
Ed. Maurer	*110,000	
H. W. Peabody & Co	*32,500	
Robert Badenhop	*30,000	
Raw Products Co	*4,500	
Henderson & Korn	*6,000	
Wallace L. Gough	*26,000	*764,000

MARCH 26.—By the *Minnetonka*=London:

Meyer & Brown	*81,000	
General Rubber Co	*45,000	
Arnold & Zeiss	*71,500	
N. Y. Commercial Co	*195,000	
James T. Johnstone	*13,500	
Charles T. Wilson	*24,500	
Rubber Trading Co	*4,500	
Robinson & Co	*5,500	
Adolph Hirsch & Co	*18,000	
L. Littlejohn & Co	*12,500	
Malaysian Rubber Co	*4,500	
W. Stiles	*2,000	
Goodyear Tire & Rubber Co	*52,000	
Various	*15,000	*544,500

MARCH 27.—By the *Finland*=Antwerp:

Meyer & Brown		*50,000

MARCH 28.—By the *New York*=Southampton:

Meyer & Brown	*24,500	
N. Y. Commercial Co	*42,000	
Ed. Maurer	*16,500	
Arnold & Zeiss	*52,000	
Charles T. Wilson	*36,000	
Raw Products Co	*2,000	
Rubber Trading Co	*2,000	*175,000

MARCH 31.—By the *Bloemfontein*=Colombo:

Meyer & Brown	*76,000	
N. Y. Commercial Co	*112,000	
Ed. Maurer	*27,000	
General Rubber Co	*22,500	*237,500

MARCH 31.—By the *St. Paul*=Southampton:

N. Y. Commercial Co	*22,500	
Arnold & Zeiss	*48,000	
Goodyear Tire & Rubber Co	*35,000	
Various	*11,000	*116,500

MARCH 31.—By the *Patricia*=Hamburg:

Various		*5,000

MARCH 31.—By the *Suveric*=Colombo:

Meyer & Brown	*32,000	
N. Y. Commercial Co	*59,000	
Ed. Maurer	*35,000	
H. W. Peabody & Co	*31,500	*157,500

APRIL 1.—By the *Lapland*=Antwerp:

Meyer & Brown		*37,500

APRIL 2.—By the *Mesaba*=London:

Meyer & Brown	*42,200	
James T. Johnstone	*48,000	
Ed. Maurer	*33,500	
General Rubber Co	*43,500	*167,200

APRIL 19.—By the *Fangturn*=Colombo:

Meyer & Brown	*42,500	
N. Y. Commercial Co	*18,000	
Ed. Maurer	*13,500	
H. W. Peabody & Co	*3,500	
Various	*18,500	*96,000

APRIL 19.—By the *Adriatic*=Southampton:

James T. Johnstone		*8,500

APRIL 19.—By the *Vaderland*=Antwerp:

Meyer & Brown		*49,000

APRIL 21.—By the *New York*=Southampton:

Arnold & Zeiss	12,500	
Meyer & Brown	*11,500	
Robinson & Co	*13,500	
Raw Products Co	*2,000	
Rubber Trading Co	*8,500	
Arnold & Zeiss	*29,000	
William H. Stiles	*5,500	
Ed. Maurer	*35,000	
Charles T. Wilson	*60,000	
Various	*13,000	*178,000

APRIL 21.—By the *Niagara*=Havre:

Michelin Tire Co		*40,000

APRIL 21.—By the *Clan McIver*=Singapore:

Arnold & Zeiss	*12,500	
Meyer & Brown	*11,200	
Ed. Maurer	*78,000	
James T. Johnstone	*22,500	
Boustead & Co	*11,200	
L. Littlejohn & Co	*41,000	
General Rubber Co	*11,200	
Various	*35,000	*222,600

APRIL 22.—By the *Minnetonka*=London:

Meyer & Brown	*65,000	
General Rubber Co	*45,000	
James T. Johnstone	*33,600	
L. Littlejohn & Co	*35,000	
Adolph Hirsch & Co	*19,000	
Boustead & Co	*1,700	
Various	*56,500	*255,800

APRIL 22.—By the *President Lincoln*=Hamburg:

Meyer & Brown	*2,000	
Charles T. Wilson	*2,000	
Various	*8,000	*12,000

BOSTON ARRIVALS.

IMPORTS IN FEBRUARY, 1913.

	Pounds.	Values.
Gutta-Jelutong	921,379	$56,201
India rubber	148,862	132,831

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—MARCH, 1913.

Imports:	Pounds.	Value.
India-rubber	10,250,913	$8,313,409
Balata	28,343	16,994
Guayule	210,026	93,405
Gutta-percha	8,819	6,513
Gutta-jelutong (Pontianak)	1,769,043	95,028
Total	12,267,144	$8,525,349
Exports:		
India-rubber	106,044	$77,158
Balata	12,323	6,200
Guayule	4,491	2,884
Gutta-percha	.....	.....
Reclaimed rubber	35,541	8,963
Gutta-jelutong (Pontianak)	.....	.....
Rubber scrap, imported	1,947,465	157,197
Rubber scrap, exported	326,999	57,638

EXPORTS OF INDIA-RUBBER FROM PARA, MANAOS AND IQUITOS FOR MARCH, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					GRAND
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	TOTAL.
Zarges, Berringer & Co	167,060	5,194	147,654	35,151	355,059	434,557	96,781	134,425	226,594	892,357	1,247,416
General Rubber Co. of Brazil	102,143	12,987	63,280	84,908	263,318	113,320	20,404	22,916	96,742	253,382	516,700
J. Marques	97,159	37,717	174,972	47,138	356,986	134,477	7,758	15,381	87,896	245,512	602,498
R. O. Ahlers & Co	10,326	.....	3,655	45,559	59,540	39,408	.....	9,911	3,477	52,796	112,336
Suarez Hermanos & Co., Ltd	.....	.....	.....	.....	.....	147,117	7,677	16,973	32,783	204,550	204,550
De Lagotellerie & Co	9,010	2,040	9,900	4,200	25,150	.....	.....	.....	.....	.....	25,150
Pires Teixeira & Co	1,700	1,700	10,560	280	14,240	12,070	.....	.....	.....	12,070	26,310
Kiernan & Peters	36,827	3,126	6,798	1,120	47,871	2,218	2,532	3,399	2,032	10,181	58,052
Sundry exporters	14,430	1,241	31,045	12,166	58,882	49,894	.....	10,474	153,664	214,032	272,914
Itacoatiara, direct	1,350	150	960	.....	2,460	5,850	150	4,440	150	10,590	13,050
	440,005	64,155	448,824	230,522	1,183,506	938,911	135,302	217,919	603,338	1,895,470	3,078,976
Manáos, direct	365,822	55,376	121,302	68,009	610,509	354,454	84,918	146,370	391,333	977,075	1,587,584
Iquitos, direct	.....	.....	.....	.....	.....	94,111	2,389	33,317	197,227	327,044	327,044
Total, March, 1913	805,827	119,531	570,126	298,531	1,794,015	1,387,476	222,609	397,606	1,191,898	3,199,589	4,993,604

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR MARCH, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					GRAND
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	TOTAL.
Zarges, Ohliger & Ca	74,303	5,306	25,574	5,346	110,529	150,879	35.482	47,412	215,735	449,508	560,037
General Rubber Co. of Brazil	34,713	3,751	10,054	3,408	51,926	33,391	20,932	21,642	57,540	133,505	185,431
Ahlers & Ca	78,403	18,887	37,239	9,138	143,667	99,108	20,927	38,035	73,546	231,616	375,283
De Lagotellerie & Co	26,354	.....	.....	.....	26,354	62,825	6,074	21,000	30,198	120,097	146,451
J. G. Araujo	.....	.....	.....	.....	.....	4,320	160	7,854	304	12,638	12,638
Mesquita & Co	.....	.....	.....	.....	.....	1,749	773	1,177	367	4,066	4,066
Semper & Co	.....	.....	.....	.....	.....	44	.....	255	261	560	560
Théodore Lévy, Camille & Co	.....	.....	.....	.....	.....	58	90	1,285	5,759	7,192	7,192
W. Peters & Co	14,544	4,520	2,071	16,464	37,599	.....	480	3,640	450	4,570	42,169
B. Levy & Co	.....	.....	.....	.....	.....	.....	.....	4,070	1,500	5,570	5,570
Demetrio Padilha	.....	.....	.....	.....	.....	.....	.....	.....	5,673	5,673	5,673
Amorim Irmãos	.....	.....	.....	.....	.....	2,080	.....	.....	.....	2,080	2,080
	228,317	32,464	74,938	34,356	370,075	354,454	84,918	146,370	391,333	977,075	1,347,150
Iquitos, direct	.....	.....	.....	.....	.....	94,111	2,389	33,317	197,227	327,044	327,044
Total	228,317	32,464	74,938	34,356	370,075	448,565	87,307	179,687	588,560	1,304,119	1,674,194

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Antwerp.

RUBBER STATISTICS FOR JANUARY.

DETAILS.	1913.	1912.	1911.	1910.	1909.
Stocks, Feb. 1....*kilos*	561,289	521,956	539,207	516,534	331,433
Arrivals in March—					
Congo sorts	172,396	172,449	365,463	174,167	410,838
Other sorts	16,715	7,642	60,342	31,452	112,645
Plantation sorts	152,685	70,873	57,591	57,569	20,643
Aggregating	903,085	772,920	1,022,603	779,722	875,559
Sales in March	251,580	413,904	376,989	280,620	279,704
Stocks, March 31	651,505	359,016	645,614	499,102	595,855
Arrivals since Jan. 1—					
Congo sorts	691,716	730,472	940,962	830,830	781,387
Other sorts	35,178	30,618	161,177	80,155	277,064
Plantation sorts	436,897	277,610	167,529	128,694	69,641
Aggregating	1,163,791	1,038,700	1,269,668	1,039,679	1,128,092
Sales since January 1	1,023,346	1,354,422	1,212,266	1,082,089	1,127,972

RUBBER ARRIVALS FROM THE CONGO.

APRIL 2.—By the steamer *Elizabethville:*

		Kilos.	
Bunge & Co.	(Société Générale Africaine)	55,200	
do	(Belgika)	1,200	
do	(Comptoir Commercial Congolais)	15,300	
do	(Comfina)	20,900	
do	(Chemins de fer Grand Lacs)	12,200	
do	(Forestière)	1,800	
Société Colonial Anversoise	(Haut Congo)	1,600	
do	(Lomami)	12,500	
do	(Cie. Franc. du Haut Congo)	6,300	
do	(Cie du Kasai)	75,000	
Charles Dethier	(American Congo Co.)	20,900	
Crédit Colonial & Commercial Anc. L. & W. Van de Velde (S. A.)		2,800	
Willaert Frères		2,500	
Osterrieth & Co.	(Lubefu)	2,400	
do	(Produits Végétx du H. Kasai)	100	
Sundries		4,300	235,000

Plantation Rubber From the Far East.

EXPORTS OF CEYLON-GROWN RUBBER.

[From January 1 to March 17, 1913. Compiled by the Ceylon Chamber of Commerce.]

	1912.	1913.
To Great Britain ....*pounds*	1,470,427	2,436,562
To United States	928,028	1,840,795
To Belgium	355,810	457,506
To Australia	26,754	74,871
To Japan	2,181	50,978
To Germany	14,307	23,479
To Italy	.....	22,460
To Austria	2,717	20,419
To Holland	.....	500
To Canada	12,121	.....
To Norway and Sweden	39	.....
Total	2,812,384	4,927,570

The export figures of rubber for 1913 given in the above table include the imports re-exported. (These amount to 505,361 pounds—376,392 pounds from the Straits and 128,969 pounds from India). To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date deduct the quantity of imports from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To	Singapore. Mar. 7.	Penang. Feb. 28.	Port Swettenham. Feb. 28.	Total.
Great Britain ..*pounds*	3,500,099	2,035,333	3,529,740	9,065,172
Continent	51,834	10,533	446,616	508,983
Japan	90,783	.....	.....	90,783
Ceylon	.....	15,467	241,823	257,290
United States	1,145,582	49,333	.....	1,194,915
Australia	18,323	.....	.....	18,323
Total, 1913	4,806,621	2,110,666	4,218,179	11,135,466
Same period, 1912	2,161,478	847,722	3,210,560	6,219,760
Same period, 1911	1,266,855	330,267	2,479,933	4,077,055
Same period, 1910	581,467	497,971	1,329,538	2,408,976